

## SUPPLEMENTARY

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## **Abbreviations**

ESA: European Space Agency

FNF: Forest/Non-forest

JAXA: Japan Aerospace Exploration Agency

MODIS: Moderate Resolution Imaging Spectroradiometer

NDVI: Normalized Difference Vegetation Index

PALSAR: Phased Array type L-band Synthetic Aperture Radar

ScanSAR: Scanning Synthetic Aperture Radar

SRTM: Shuttle Radar Topography Mission

# Supplementary 1: Overall accuracy assessment for FNF classification in three test sites in Vietnam

Table S1.1a. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 1. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 96     | 21         | 117   | 0.552   |
| Non-forest | 44     | 39         | 83    |   |
| Total      | 140    | 60         | 200   |   |

Table S1.1b. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 1. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 7      | 6          | 13    | 0.448  |
| Non-forest | 13     | 174        | 187   |  |
| Total      | 20     | 180        | 200   |  |

Table S1.1c. An error matrix of area proportion for the FNF map (using single-temporal PALSAR-2) in site 1.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.280  | 0.071      | 0.352 | 79.7            | 77.8 $\pm$ 2.1                        |
| Non-forest          | 0.150  | 0.498      | 0.648 | 76.8            |                                       |
| Total               | 0.431  | 0.569      | 1     |                 |                                       |
| Producer's acc. (%) | 65.1   | 87.5       |       |                 |                                       |

Table S1.2a. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 2. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 152    | 10         | 162   | 0.687   |
| Non-forest | 33     | 5          | 38    |   |
| Total      | 185    | 15         | 200   |   |

Table S1.2b. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 2. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 69     | 14         | 83    | 0.313  |
| Non-forest | 21     | 96         | 117   |  |
| Total      | 90     | 110        | 200   |  |

Table S1.2c. An error matrix of area proportion for the FNF map (using single-temporal PALSAR-2) in site 1.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.630  | 0.056      | 0.686 | 91.8            | 79.8 $\pm$ 2.0                        |
| Non-forest          | 0.146  | 0.167      | 0.314 | 53.4            |                                       |
| Total               | 0.776  | 0.224      | 1     |                 |                                       |
| Producer's acc. (%) | 81.2   | 74.8       |       |                 |                                       |



Table S1.3a. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 3. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 108    | 10         | 118   | 0.573   |
| Non-forest | 61     | 21         | 82    |   |
| Total      | 169    | 31         | 200   |   |

Table S1.3b. An error matrix of sample counts for the FNF map (using single-temporal PALSAR-2) in site 3. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 5      | 13         | 18    | 0.427  |
| Non-forest | 11     | 171        | 182   |  |
| Total      | 16     | 184        | 200   |  |

Table S1.3c. An error matrix of area proportion for the FNF map (using single-temporal PALSAR-2) in site 3.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.320  | 0.056      | 0.377 | 85.0            | 74.5 $\pm$ 2.2                        |
| Non-forest          | 0.198  | 0.425      | 0.623 | 68.2            |                                       |
| Total               | 0.519  | 0.481      | 1     |                 |                                       |
| Producer's acc. (%) | 61.8   | 88.3       |       |                 |                                       |

Table S1.4a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 1. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 133    | 41         | 174   | 0.552   |
| Non-forest | 7      | 19         | 26    |   |
| Total      | 140    | 60         | 200   |   |

Table S1.4b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 1. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 3      | 8          | 11    | 0.448  |
| Non-forest | 17     | 172        | 189   |  |
| Total      | 20     | 180        | 200   |  |

Table S1.4c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 1.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.374  | 0.131      | 0.505 | 74.0            | 81.2 $\pm$ 2.0                        |
| Non-forest          | 0.057  | 0.438      | 0.495 | 88.4            |                                       |
| Total               | 0.431  | 0.569      | 1     |                 |                                       |
| Producer's acc. (%) | 86.7   | 77.0       |       |                 |                                       |

Table S1.5a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 2. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 172    | 7          | 179   | 0.687   |
| Non-forest | 13     | 8          | 21    |   |
| Total      | 185    | 15         | 200   |   |

Table S1.5b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 2. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 73     | 7          | 80    | 0.313  |
| Non-forest | 17     | 103        | 120   |  |
| Total      | 90     | 110        | 200   |  |

Table S1.5c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 2.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.705  | 0.035      | 0.740 | 95.3            | 89.4 $\pm$ 1.6                        |
| Non-forest          | 0.071  | 0.189      | 0.260 | 72.6            |                                       |
| Total               | 0.776  | 0.224      | 1     |                 |                                       |
| Producer's acc. (%) | 90.8   | 84.4       |       |                 |                                       |

Table S1.6a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 3. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 168    | 30         | 198   | 0.573   |
| Non-forest | 1      | 1          | 2     |   |
| Total      | 169    | 31         | 200   |   |

Table S1.6b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 3. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 9      | 14         | 23    | 0.427  |
| Non-forest | 7      | 170        | 177   |  |
| Total      | 16     | 184        | 200   |  |

Table S1.6c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR) in site 3.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.501  | 0.116      | 0.617 | 81.2            | 86.6 $\pm$ 1.7                        |
| Non-forest          | 0.018  | 0.366      | 0.383 | 95.4            |                                       |
| Total               | 0.519  | 0.481      | 1     |                 |                                       |
| Producer's acc. (%) | 96.6   | 75.9       |       |                 |                                       |

Table S1.7a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 1. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 140    | 47         | 187   | 0.552   |
| Non-forest | 0      | 13         | 13    |   |
| Total      | 140    | 60         | 200   |   |

Table S1.7b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 1. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 0      | 0          | 0     | 0.448  |
| Non-forest | 20     | 180        | 200   |  |
| Total      | 20     | 180        | 200   |  |

Table S1.7c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 1.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.386  | 0.130      | 0.516 | 74.9            | 82.6 $\pm$ 1.9                        |
| Non-forest          | 0.045  | 0.439      | 0.484 | 90.7            |                                       |
| Total               | 0.431  | 0.569      | 1     |                 |                                       |
| Producer's acc. (%) | 89.6   | 77.2       |       |                 |                                       |

Table S1.8a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 2. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 185    | 11         | 196   | 0.687   |
| Non-forest | 0      | 4          | 4     |   |
| Total      | 185    | 15         | 200   |   |

Table S1.8b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 2. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 81     | 9          | 90    | 0.313  |
| Non-forest | 9      | 101        | 110   |  |
| Total      | 90     | 110        | 200   |  |

Table S1.8c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 2.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard<br>error (%) |
|---------------------|--------|------------|-------|--------------------|---|
|                     | Forest | Non-forest |       |                    |   |
| Forest              | 0.762  | 0.052      | 0.814 | 93.6               | 93.4 $\pm$ 1.3                              |
| Non-forest          | 0.014  | 0.172      | 0.186 | 92.4               |   |
| Total               | 0.776  | 0.224      | 1     |                    |   |
| Producer's acc. (%) | 98.2   | 76.8       |       |                    |   |

Table S1.9a. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 3. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 169    | 30         | 199   | 0.573   |
| Non-forest | 0      | 1          | 1     |   |
| Total      | 169    | 31         | 200   |   |

Table S1.9b. An error matrix of sample counts for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 3. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in the test site) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 7      | 1          | 8     | 0.427  |
| Non-forest | 9      | 183        | 192   |  |
| Total      | 16     | 184        | 200   |  |

Table S1.9c. An error matrix of area proportion for the FNF map (using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM) in site 3.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |
| Forest              | 0.499  | 0.088      | 0.588 | 85.0            | 89.3 $\pm$ 1.6                        |
| Non-forest          | 0.019  | 0.393      | 0.412 | 95.3            |                                       |
| Total               | 0.519  | 0.481      | 1     |                 |                                       |
| Producer's acc. (%) | 96.3   | 81.7       |       |                 |                                       |

**Supplementary 2: Accuracy assessment and forest area estimation for FNF maps of Vietnam  
(FNF maps used multi-temporal PALSAR-2/ScanSAR, MODIS NDVI, and SRTM images)**

Table S2.1a. An error matrix of sample counts for the FNF map of Vietnam in 2015. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|--|
|            | Forest | Non-forest |       |   |  |
| Forest     | 209    | 27         | 236   | 14,394,471                                  | 0.433  |
| Non-forest | 5      | 9          | 14    | 19,413,267                                  |  |
| Total      | 214    | 36         | 250   | 33,807,738                                  |  |

Table S2.1b. An error matrix of sample counts for the FNF map of Vietnam in 2015. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|---|
|            | Forest | Non-forest |       |   |   |
| Forest     | 11     | 7          | 18    | 14,394,471                                  |   |
| Non-forest | 22     | 210        | 232   | 19,413,267                                  | 0.567   |
| Total      | 33     | 217        | 250   | 33,807,738                                  |   |

Table S2.1c. An error matrix of area proportion for the FNF map of Vietnam in 2015.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard<br>error (%) | Unbiased<br>estimated area<br>(ha) |
|---------------------|--------|------------|-------|--------------------|---|------------------------------------|
|                     | Forest | Non-forest |       |                    |   |                                    |
| Forest              | 0.387  | 0.063      | 0.449 | 86.1               |   | 15,051,474                         |
| Non-forest          | 0.059  | 0.492      | 0.551 | 89.4               | 87.9 $\pm$ 1.5                              | 18,756,263                         |
| Total               | 0.445  | 0.555      | 1.000 |                    |   | 33,807,738                         |
| Producer's acc. (%) | 86.8   | 88.7       |       |                    |   |                                    |

The standard error of the unbiased estimated forest area:  $0.49 \times 10^6$  ha



Table S2.2a. An error matrix of sample counts for the FNF map of Vietnam in 2016. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|--|
|            | Forest | Non-forest |       |   |  |
| Forest     | 203    | 35         | 238   | 14,394,471                                  | 0.433  |
| Non-forest | 4      | 8          | 12    | 19,413,267                                  |  |
| Total      | 207    | 43         | 250   | 33,807,738                                  |  |

Table S2.2b. An error matrix of sample counts for the FNF map of Vietnam in 2016. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|---|
|            | Forest | Non-forest |       |   |   |
| Forest     | 8      | 9          | 17    | 14,394,471                                  | 0.567   |
| Non-forest | 23     | 210        | 233   | 19,413,267                                  |   |
| Total      | 31     | 219        | 250   | 33,807,738                                  |   |

Table S2.2c. An error matrix of area proportion for the FNF map of Vietnam in 2016.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard<br>error (%) | Unbiased<br>estimated area<br>(ha) |
|---------------------|--------|------------|-------|--------------------|---|------------------------------------|
|                     | Forest | Non-forest |       |                    |   |                                    |
| Forest              | 0.369  | 0.081      | 0.450 | 82.0               | 86.0 $\pm$ 1.6                              | 14,488,503                         |
| Non-forest          | 0.059  | 0.490      | 0.550 | 89.2               |   | 19,319,235                         |
| Total               | 0.429  | 0.571      | 1.000 |                    |   | 33,807,738                         |
| Producer's acc. (%) | 86.2   | 85.8       |       |                    |   |                                    |

The standard error of the unbiased estimated forest area:  $0.51 \times 10^6$  ha

Table S2.3a. An error matrix of sample counts for the FNF map of Vietnam in 2017. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|--|
|            | Forest | Non-forest |       |   |  |
| Forest     | 214    | 36         | 250   | 14,625,487                                  | 0.433  |
| Non-forest | 0      | 0          | 0     | 19,182,250                                  |  |
| Total      | 214    | 36         | 250   | 33,807,738                                  |  |

Table S2.3b. An error matrix of sample counts for the FNF map of Vietnam in 2017. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|---|
|            | Forest | Non-forest |       |   |   |
| Forest     | 5      | 4          | 9     | 14,625,487                                  | 0.567   |
| Non-forest | 26     | 215        | 241   | 19,182,250                                  |   |
| Total      | 31     | 219        | 250   | 33,807,738                                  |   |

Table S2.3c. An error matrix of area proportion for the FNF map of Vietnam in 2017.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>± Standard<br>error (%) | Unbiased<br>estimated area<br>(ha) |
|---------------------|--------|------------|-------|--------------------|---|------------------------------------|
|                     | Forest | Non-forest |       |                    |   |                                    |
| Forest              | 0.382  | 0.071      | 0.453 | 84.2               | 87.0 ± 1.5                              | 14,898,016                         |
| Non-forest          | 0.059  | 0.488      | 0.547 | 89.2               |   | 18,909,721                         |
| Total               | 0.441  | 0.559      | 1     |                    |   | 33,807,738                         |
| Producer's acc. (%) | 86.6   | 87.2       |       |                    |   |                                    |

The standard error of the unbiased estimated forest area:  $0.51 \times 10^6$  ha

Table S2.4a. An error matrix of sample counts for the FNF map of Vietnam in 2018. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|--|
|            | Forest | Non-forest |       |   |  |
| Forest     | 206    | 37         | 243   | 14,394,471                                  | 0.433  |
| Non-forest | 2      | 5          | 7     | 19,413,267                                  |  |
| Total      | 208    | 42         | 250   | 33,807,738                                  |  |

Table S2.4b. An error matrix of sample counts for the FNF map of Vietnam in 2018. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area<br>from counting<br>pixels (ha) | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|---|
|            | Forest | Non-forest |       |   |   |
| Forest     | 9      | 10         | 19    | 14,394,471                                  |   |
| Non-forest | 24     | 207        | 231   | 19,413,267                                  | 0.567   |
| Total      | 33     | 217        | 250   | 33,807,738                                  |   |

Table S2.4c. An error matrix of area proportion for the FNF map of Vietnam in 2018.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard<br>error (%) | Unbiased<br>estimated area<br>(ha) |
|---------------------|--------|------------|-------|--------------------|---|------------------------------------|
|                     | Forest | Non-forest |       |                    |   |                                    |
| Forest              | 0.377  | 0.087      | 0.464 | 81.3               |   | 14,700,463                         |
| Non-forest          | 0.058  | 0.478      | 0.536 | 89.2               |   | 19,107,275                         |
| Total               | 0.435  | 0.565      | 1.000 |                    | 85.5 $\pm$ 1.6                              | 33,807,738                         |
| Producer's acc. (%) | 86.7   | 84.7       |       |                    |   |                                    |

The standard error of the unbiased estimated forest area:  $0.52 \times 10^6$  ha

### Supplementary 3: Accuracy assessment and forest change estimation for forest gain and loss map

Table S3.1a. An error matrix of sample counts for the forest gain and loss map of Vietnam between 2015 and 2018. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted | Actual |      |           | Total | Mapped area from counting pixels (ha) | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|-----------|--------|------|-----------|-------|---------------------------------------|--|
|           | Gain   | Loss | No change |       |                                       |  |
| Gain      | 2      | 0    | 4         | 6     | 1,291,861                             | 0.433  |
| Loss      | 1      | 1    | 11        | 13    | 1,610,703                             |  |
| No change | 9      | 5    | 217       | 231   | 30,905,174                            |  |
| Total     | 12     | 6    | 232       | 250   | 33,807,738                            |  |

Table S3.1b. An error matrix of sample counts for the forest gain and loss map of Vietnam between 2015 and 2018. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted | Actual |      |           | Total | Mapped area from counting pixels (ha) | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|-----------|--------|------|-----------|-------|---------------------------------------|---|
|           | Gain   | Loss | No change |       |                                       |   |
| Gain      | 1      | 1    | 8         | 10    | 1,291,861                             | 0.567   |
| Loss      | 0      | 1    | 10        | 11    | 1,610,703                             |   |
| No change | 4      | 3    | 222       | 229   | 30,905,174                            |   |
| Total     | 5      | 5    | 240       | 250   | 33,807,738                            |   |

Table S3.1c. An error matrix of area proportion for the forest gain and loss map between 2015 and 2018.

| Predicted           | Actual |       |           | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) | Unbiased estimated area (ha) |
|---------------------|--------|-------|-----------|-------|-----------------|---------------------------------------|------------------------------|
|                     | Gain   | Loss  | No change |       |                 |                                       |                              |
| Gain                | 0.006  | 0.002 | 0.025     | 0.033 | 17.3            | 88.9 $\pm$ 1.4                        | 1,085,668                    |
| Loss                | 0.002  | 0.004 | 0.042     | 0.047 | 8.4             |                                       | 734,657                      |
| No change           | 0.025  | 0.015 | 0.879     | 0.919 | 95.6            |                                       | 31,987,412                   |
| Total               | 0.032  | 0.022 | 0.946     | 1     |                 |                                       | 33,807,738                   |
| Producer's acc. (%) | 17.8   | 18.4  | 92.9      |       |                 |                                       |                              |

- The standard error of the unbiased estimated forest gain area:  $0.20 \times 10^6$  ha

- The standard error of the unbiased estimated forest loss area:  $0.14 \times 10^6$  ha

**Supplementary 4: Accuracy assessment and forest area estimation for FNF of Vietnam extracted from global FNF maps of JAXA and a global land cover map of ESA**

Table S4.1a. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2015. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|--|
|            | Forest | Non-forest |       |                                       |  |
| Forest     | 164    | 23         | 187   | 15,295,853                            | 0.433  |
| Non-forest | 50     | 13         | 63    | 18,516,783                            |  |
| Total      | 214    | 36         | 250   | 33,812,637                            |  |

Table S4.1b. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2015. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|---|
|            | Forest | Non-forest |       |                                       |   |
| Forest     | 16     | 28         | 44    | 15,295,853                            |   |
| Non-forest | 17     | 189        | 206   | 18,516,783                            | 0.567   |
| Total      | 33     | 217        | 250   | 33,812,637                            |   |

Table S4.1c. An error matrix of area proportion for the JAXA FNF map of Vietnam in 2015.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) | Unbiased estimated area (ha) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |                              |
| Forest              | 0.320  | 0          | 0.423 | 75.6            |                                       | 15,053,655                   |
| Non-forest          | 0.125  | 0.451      | 0.577 | 78.3            |                                       | 18,758,981                   |
| Total               | 0.445  | 0.555      | 1     |                 | 77.2 $\pm$ 1.9                        | 33,812,637                   |
| Producer's acc. (%) | 71.9   | 81.4       |       |                 |                                       |                              |

The standard error of the unbiased estimated forest area:  $0.51 \times 10^6$  ha

Table S4.2a. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2016. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|--|
|            | Forest | Non-forest |       |                                       |  |
| Forest     | 165    | 25         | 190   | 15,295,853                            | 0.433  |
| Non-forest | 42     | 18         | 60    | 18,516,783                            |  |
| Total      | 207    | 43         | 250   | 33,812,637                            |  |

Table S4.2b. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2016. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|---|
|            | Forest | Non-forest |       |                                       |   |
| Forest     | 9      | 23         | 32    | 15,295,853                            | 0.567   |
| Non-forest | 22     | 196        | 218   | 18,516,783                            |   |
| Total      | 31     | 219        | 250   | 33,812,637                            |   |

Table S4.2c. An error matrix of area proportion for the JAXA FNF map of Vietnam in 2016.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) | Unbiased estimated area (ha) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |                              |
| Forest              | 0.306  | 0          | 0.401 | 76.2            | 78.2 $\pm$ 1.8                        | 14,490,602                   |
| Non-forest          | 0.123  | 0.476      | 0.599 | 79.5            |                                       | 19,322,034                   |
| Total               | 0.429  | 0.571      | 1     |                 |                                       | 33,812,637                   |
| Producer's acc. (%) | 71.4   | 83.3       |       |                 |                                       |                              |

The standard error of the unbiased estimated forest area:  $0.52 \times 10^6$  ha

Table S4.3a. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2017. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|--|
|            | Forest | Non-forest |       |                                       |  |
| Forest     | 171    | 25         | 196   | 15,295,853                            | 0.433  |
| Non-forest | 43     | 11         | 54    | 18,516,783                            |  |
| Total      | 214    | 36         | 250   | 33,812,637                            |  |

Table S4.3b. An error matrix of sample counts for the JAXA FNF map of Vietnam in 2017. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|---|
|            | Forest | Non-forest |       |                                       |   |
| Forest     | 13     | 31         | 44    | 15,295,853                            | 0.567   |
| Non-forest | 18     | 188        | 206   | 18,516,783                            |   |
| Total      | 31     | 219        | 250   | 33,812,637                            |   |

Table S4.3c. An error matrix of area proportion for the JAXA FNF map of Vietnam in 2017.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) | Unbiased estimated area (ha) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |                              |
| Forest              | 0.325  | 0          | 0.439 | 74.1            | 77.1 $\pm$ 1.9                        | 14,900,175                   |
| Non-forest          | 0.115  | 0.446      | 0.561 | 79.5            |                                       | 18,912,461                   |
| Total               | 0.441  | 0.559      | 1     |                 |                                       | 33,812,637                   |
| Producer's acc. (%) | 73.8   | 79.7       |       |                 |                                       |                              |

The standard error of the unbiased estimated forest area:  $0.51 \times 10^6$  ha

Table S4.4a. An error matrix of sample counts for the ESA FNF map of Vietnam in 2015. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(f)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|--|
|            | Forest | Non-forest |       |                                       |  |
| Forest     | 186    | 16         | 202   | 12,756,183                            | 0.433  |
| Non-forest | 28     | 20         | 48    | 21,082,027                            |  |
| Total      | 214    | 36         | 250   | 33,838,211                            |  |

Table S4.4b. An error matrix of sample counts for the ESA FNF map of Vietnam in 2015. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | Mapped area from counting pixels (ha) | $W_{(nf)}$ (from ScanSAR/NDVI/SRTM FNF map in 2017) |
|------------|--------|------------|-------|---------------------------------------|---|
|            | Forest | Non-forest |       |                                       |   |
| Forest     | 11     | 9          | 20    | 12,756,183                            | 0.567   |
| Non-forest | 22     | 208        | 230   | 21,082,027                            |   |
| Total      | 33     | 217        | 250   | 33,838,211                            |   |

Table S4.4c. An error matrix of area proportion for the ESA FNF map of Vietnam in 2015.

| Predicted           | Actual |            | Total | User's acc. (%) | Overall acc. $\pm$ Standard error (%) | Unbiased estimated area (ha) |
|---------------------|--------|------------|-------|-----------------|---------------------------------------|------------------------------|
|                     | Forest | Non-forest |       |                 |                                       |                              |
| Forest              | 0.347  | 0          | 0.395 | 87.8            | 85.4 $\pm$ 1.6                        | 15,065,041                   |
| Non-forest          | 0.098  | 0.507      | 0.605 | 83.7            |                                       | 18,773,169                   |
| Total               | 0.445  | 0.555      | 1     |                 |                                       | 33,838,211                   |
| Producer's acc. (%) | 77.9   | 91.3       |       |                 |                                       |                              |

The standard error of the unbiased estimated forest area:  $0.49 \times 10^6$  ha



**Supplementary 5: Accuracy assessment and forest area estimation for FNF maps of Vietnam  
(FNF maps used only multi-temporal PALSAR-2/ScanSAR images)**

Table S5.1a. An error matrix of sample counts for the FNF map of Vietnam in 2015. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 193    | 32         | 225   | 0.433  |
| Non-forest | 14     | 11         | 25    |  |
| Total      | 207    | 43         | 250   |  |

Table S5.1b. An error matrix of sample counts for the FNF map of Vietnam in 2015. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 7      | 12         | 19    | 0.567   |
| Non-forest | 26     | 205        | 231   |   |
| Total      | 33     | 217        | 250   |   |

Table S5.1c. An error matrix of area proportion for the ESA FNF map of Vietnam in 2015.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>± Standard error<br>(%) |
|---------------------|--------|------------|-------|--------------------|---|
|                     | Forest | Non-forest |       |                    |   |
| Forest              | 0.350  | 0.083      | 0.432 | 80.9               | 83.4 ± 1.7                              |
| Non-forest          | 0.083  | 0.484      | 0.568 | 85.3               |   |
| Total               | 0.433  | 0.567      | 1     |                    |   |
| Producer's acc. (%) | 80.8   | 85.4       |       |                    |   |

Table S5.2a. An error matrix of sample counts for the FNF map of Vietnam in 2016. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 193    | 32         | 225   | 0.433  |
| Non-forest | 14     | 11         | 25    |  |
| Total      | 207    | 43         | 250   |  |

Table S5.2b. An error matrix of sample counts for the FNF map of Vietnam in 2016. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 7      | 11         | 18    | 0.567   |
| Non-forest | 24     | 208        | 232   |   |
| Total      | 31     | 219        | 250   |   |

Table S5.2c. An error matrix of area proportion for the FNF map of Vietnam in 2016.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard error<br>(%) |
|---------------------|--------|------------|-------|--------------------|---|
|                     | Forest | Non-forest |       |                    |   |
| Forest              | 0.350  | 0.080      | 0.430 | 81.3               | 84.1 $\pm$ 1.6                              |
| Non-forest          | 0.079  | 0.491      | 0.570 | 86.2               |   |
| Total               | 0.429  | 0.571      | 1     |                    |   |
| Producer's acc. (%) | 81.6   | 85.9       |       |                    |   |

Table S5.3a. An error matrix of sample counts for the FNF map of Vietnam in 2017. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 200    | 33         | 233   | 0.433  |
| Non-forest | 14     | 3          | 17    |  |
| Total      | 214    | 36         | 250   |  |

Table S5.3b. An error matrix of sample counts for the FNF map of Vietnam in 2017. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 8      | 10         | 18    | 0.567   |
| Non-forest | 23     | 209        | 232   |   |
| Total      | 31     | 219        | 250   |   |

Table S5.3c. An error matrix of area proportion for the FNF map of Vietnam in 2017.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard error<br>(%) |
|---------------------|--------|------------|-------|--------------------|---|
|                     | Forest | Non-forest |       |                    |   |
| Forest              | 0.364  | 0.080      | 0.444 | 82.0               | 84.4 $\pm$ 1.6                              |
| Non-forest          | 0.076  | 0.480      | 0.556 | 86.3               |   |
| Total               | 0.441  | 0.559      | 1     |                    |   |
| Producer's acc. (%) | 82.7   | 85.7       |       |                    |   |

Table S5.4a. An error matrix of sample counts for the FNF map of Vietnam in 2018. The reference data is based on forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(f)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|--|
|            | Forest | Non-forest |       |  |
| Forest     | 195    | 33         | 228   | 0.433  |
| Non-forest | 13     | 9          | 22    |  |
| Total      | 208    | 42         | 250   |  |

Table S5.4b. An error matrix of sample counts for the FNF map of Vietnam in 2018. The reference data is based on non-forest stratum of ScanSAR/NDVI/SRTM FNF map of Vietnam in 2017.

| Predicted  | Actual |            | Total | $W_{(nf)}$ (from<br>ScanSAR/NDVI/SRTM<br>FNF map in 2017) |
|------------|--------|------------|-------|---|
|            | Forest | Non-forest |       |   |
| Forest     | 11     | 9          | 20    | 0.567   |
| Non-forest | 22     | 208        | 230   |   |
| Total      | 33     | 217        | 250   |   |

Table S5.4c. An error matrix of area proportion for the FNF map of Vietnam in 2018.

| Predicted           | Actual |            | Total | User's acc.<br>(%) | Overall acc.<br>$\pm$ Standard error<br>(%) |
|---------------------|--------|------------|-------|--------------------|---|
|                     | Forest | Non-forest |       |                    |   |
| Forest              | 0.362  | 0.078      | 0.440 | 82.4               | 85.0 $\pm$ 1.6                              |
| Non-forest          | 0.072  | 0.488      | 0.560 | 87.1               |   |
| Total               | 0.435  | 0.565      | 1     |                    |   |
| Producer's acc. (%) | 83.3   | 86.3       |       |                    |   |

Supplementary 6. Land cover and forest/non-forest maps for Vietnam

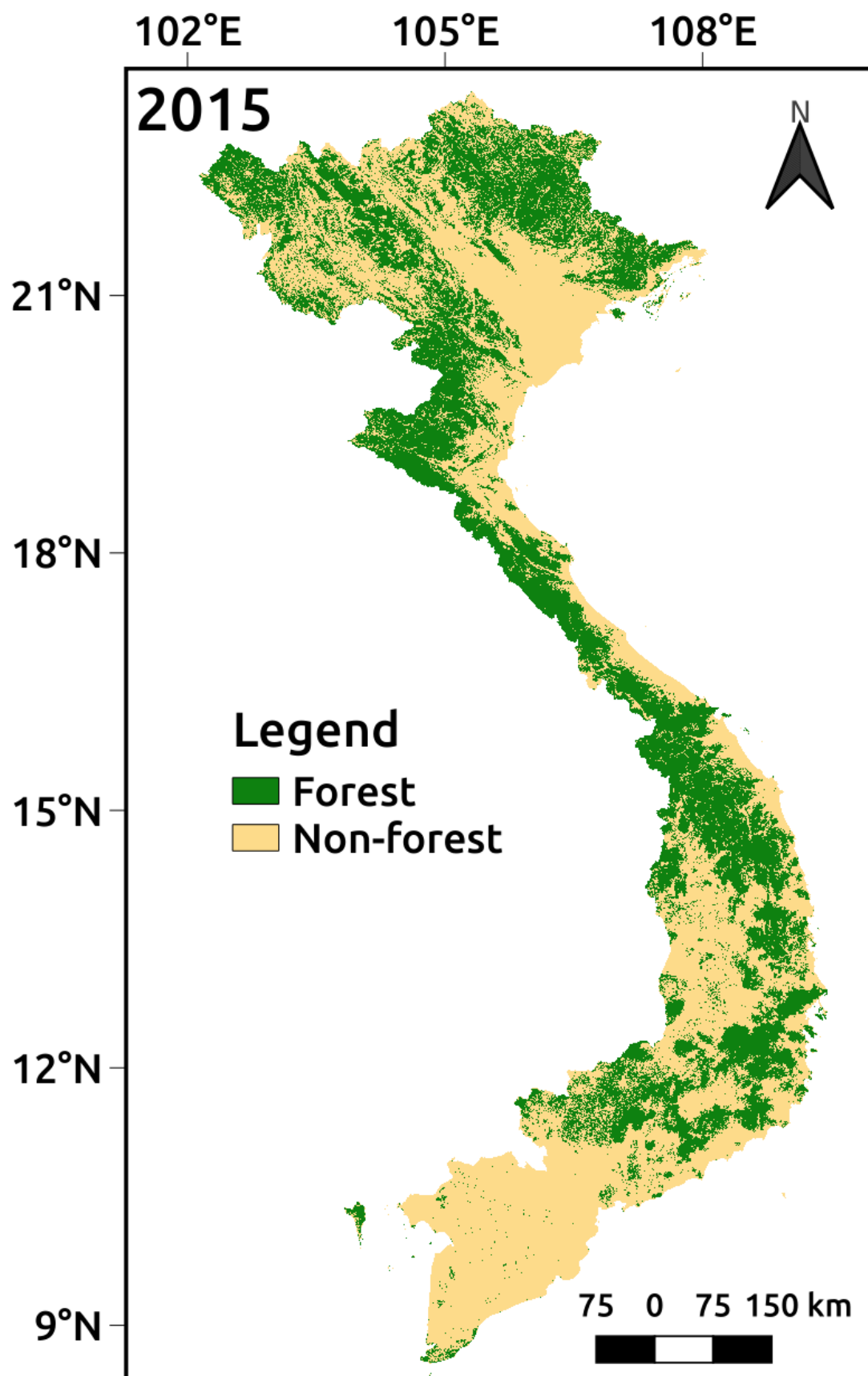


Figure S6.1A. Forest/non-forest maps for Vietnam in 2015  
(using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM images)

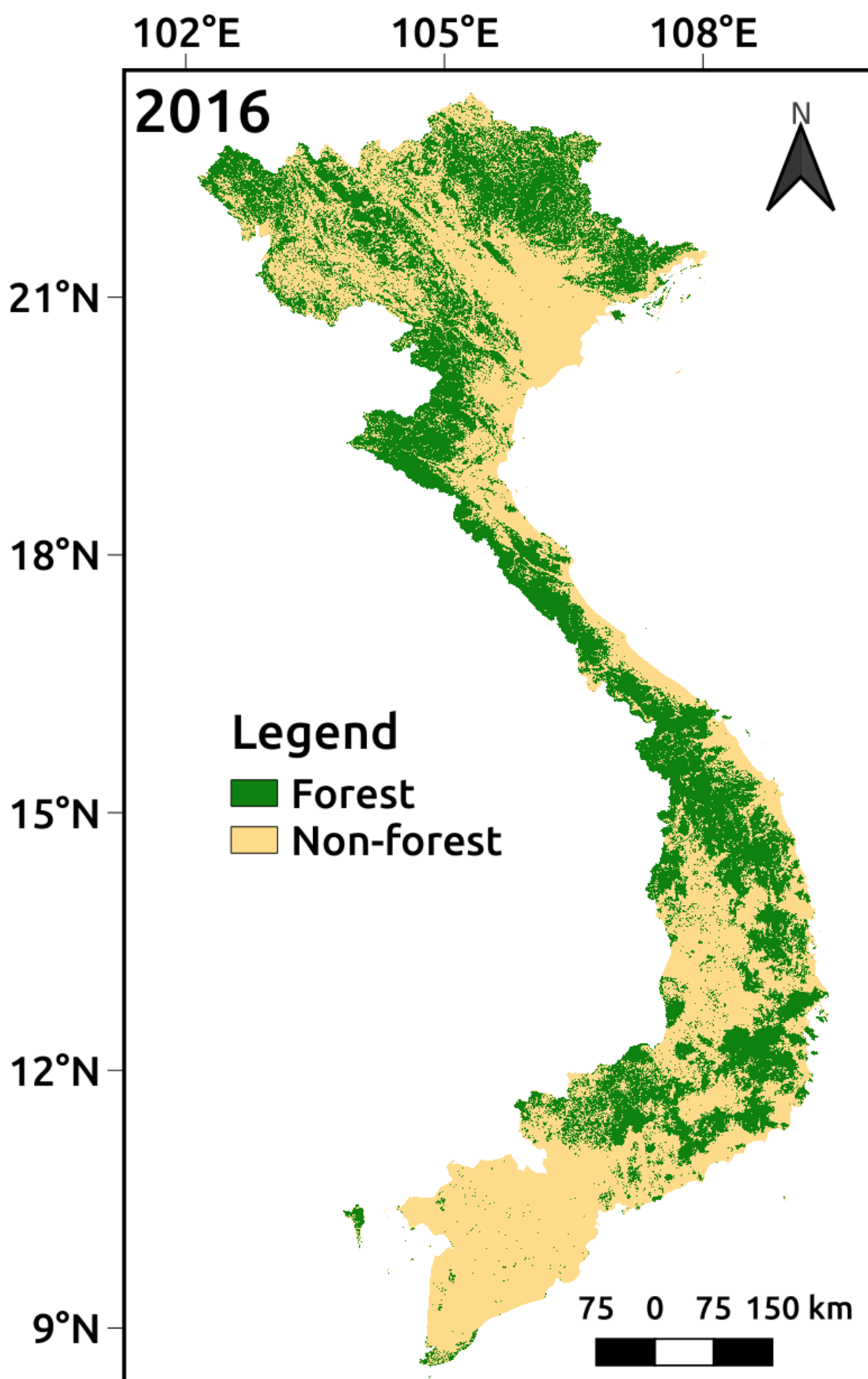


Figure S6.1B. Forest/non-forest maps for Vietnam in 2016  
(using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM images)

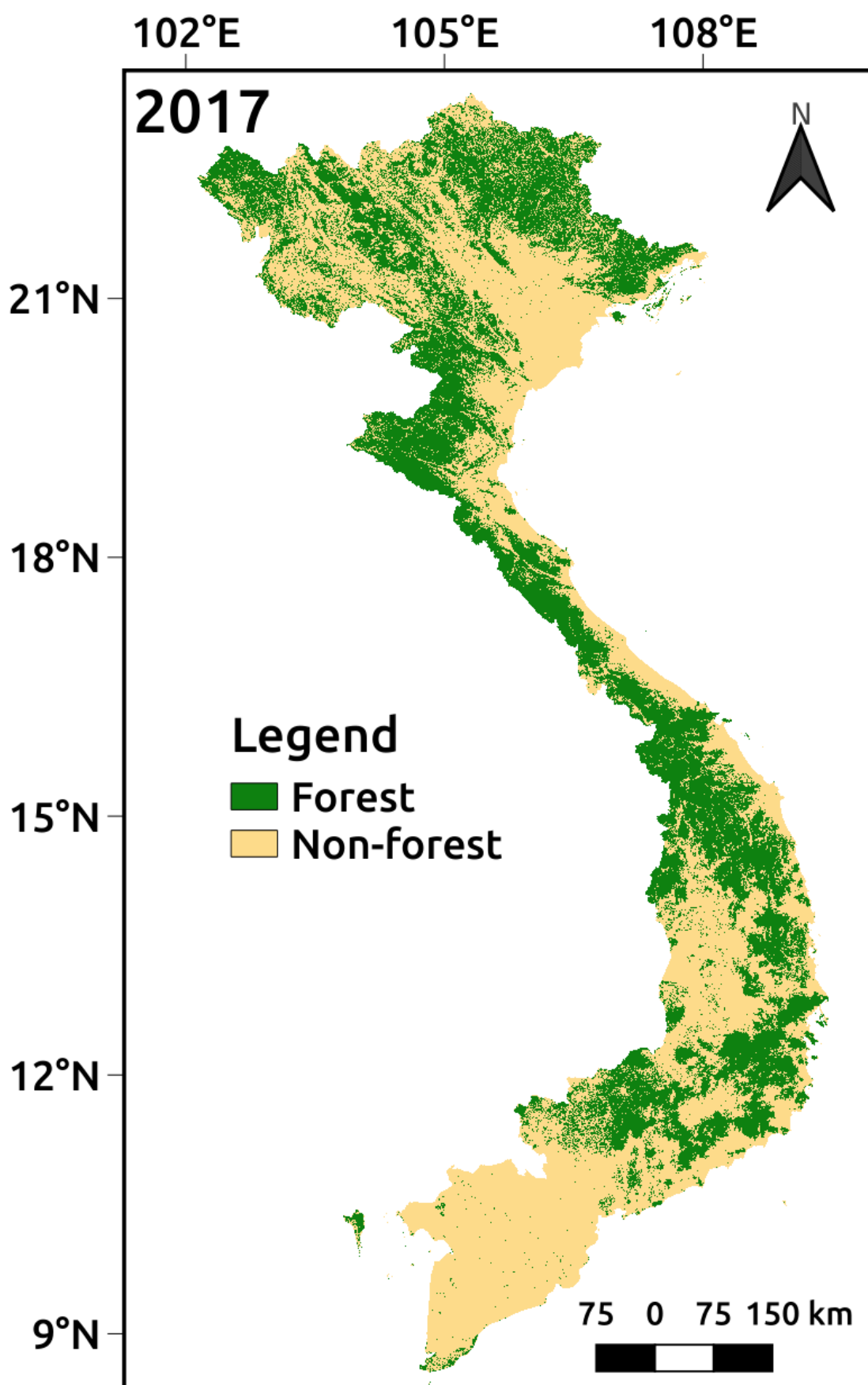


Figure S6.1C Forest/non-forest maps for Vietnam in 2017  
(using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM images)

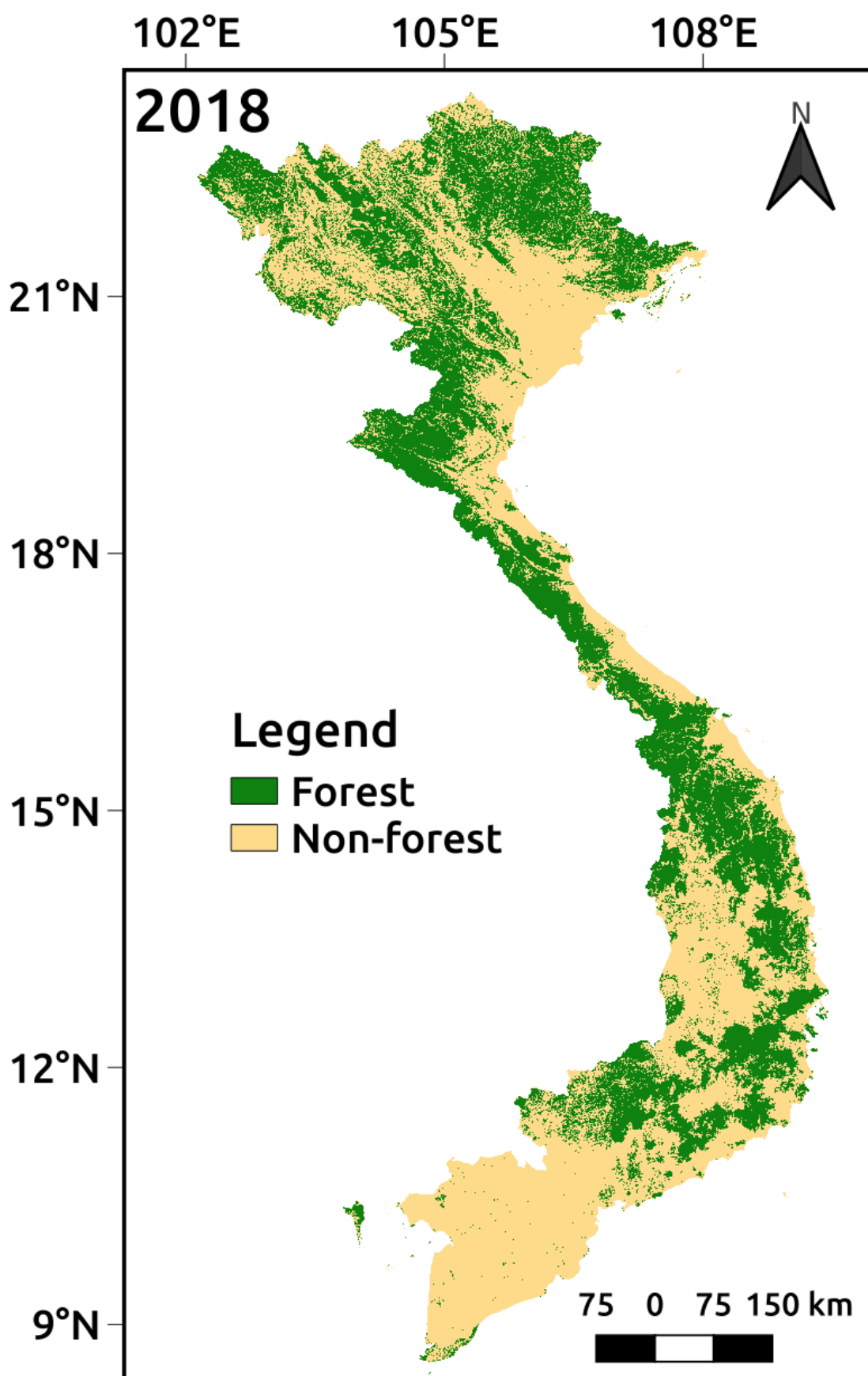


Figure S6.1D. Forest/non-forest maps for Vietnam in 2018  
(using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM images)



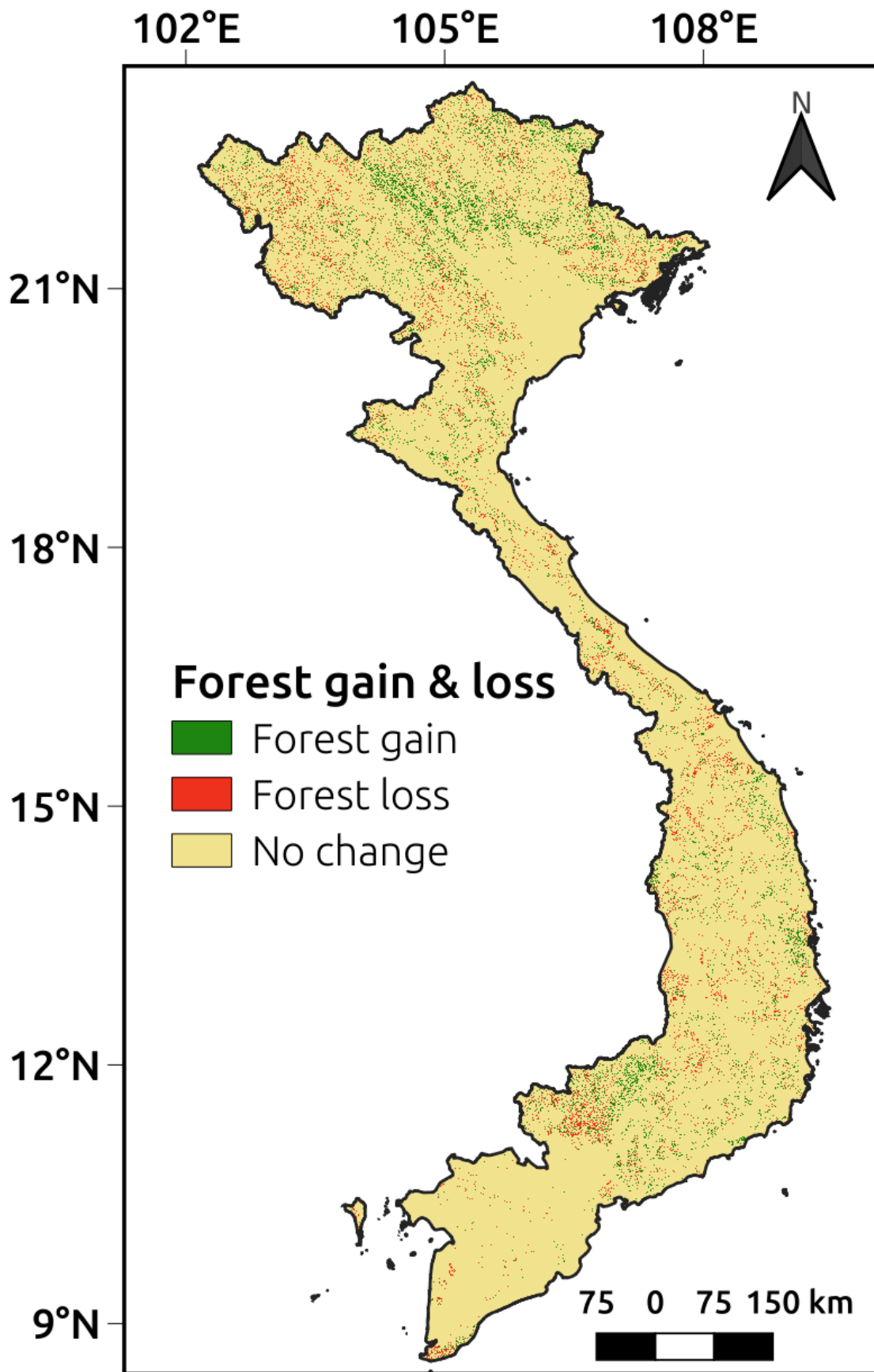
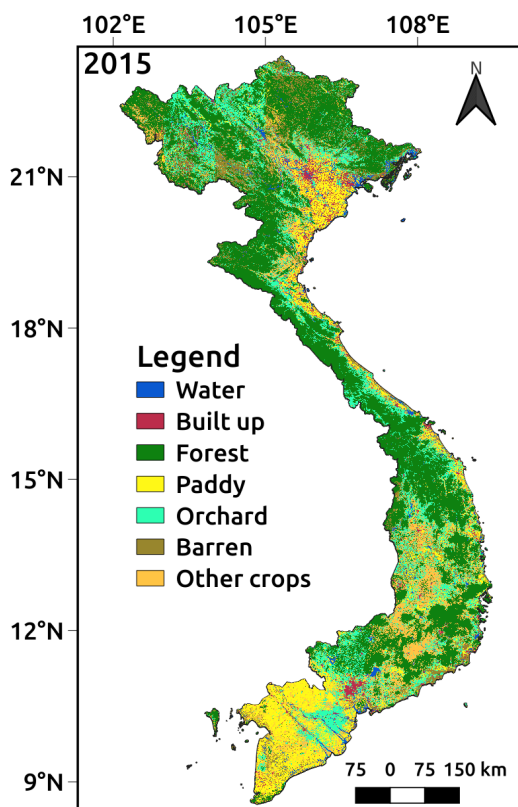
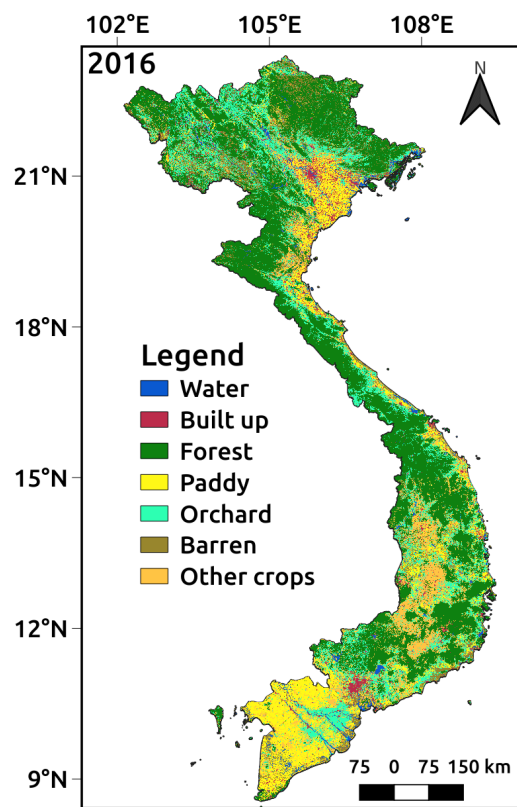


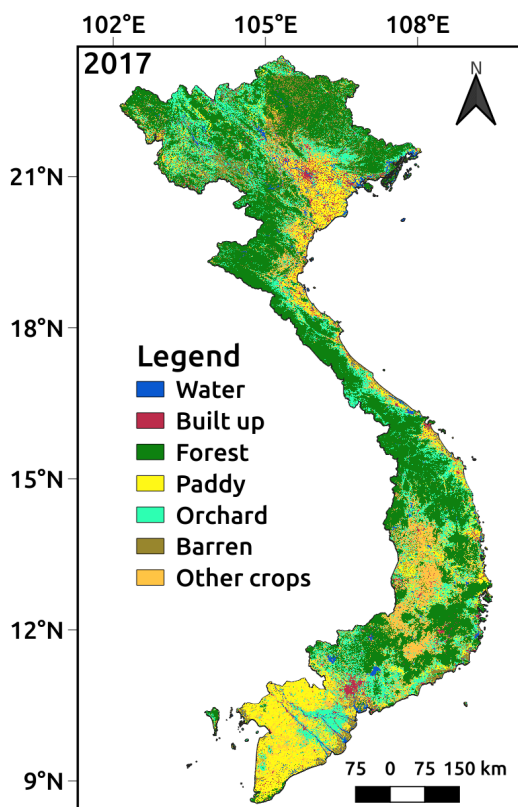
Figure S6.2. Forest gain and loss map between 2015 and 2018  
(based on FNF maps from multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM images)



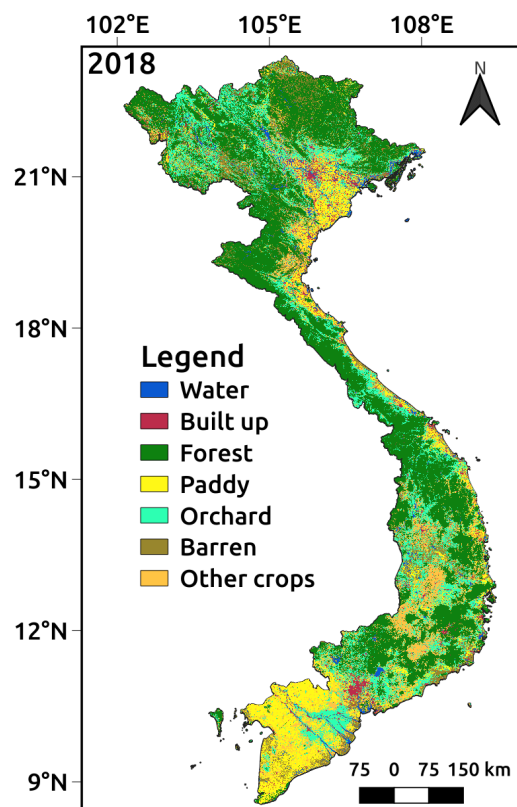
(A) Land cover map in 2015



(B) Land cover map in 2016

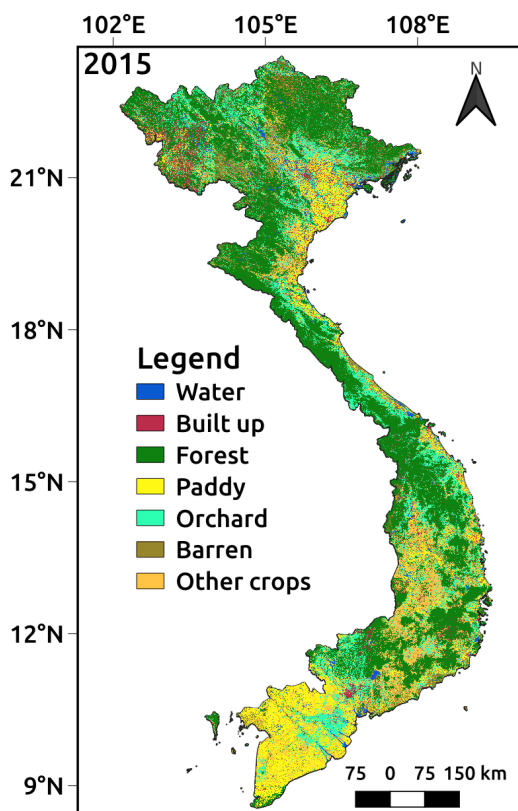


(C) Land cover map in 2017

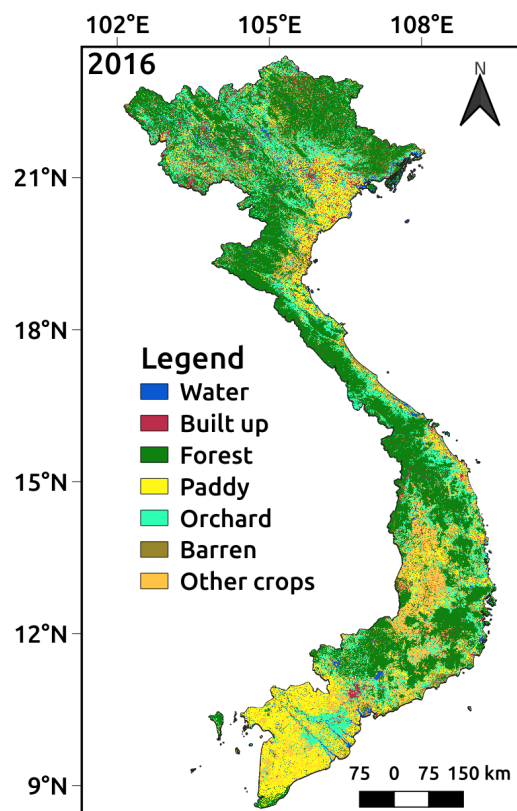


(D) Land cover map in 2018

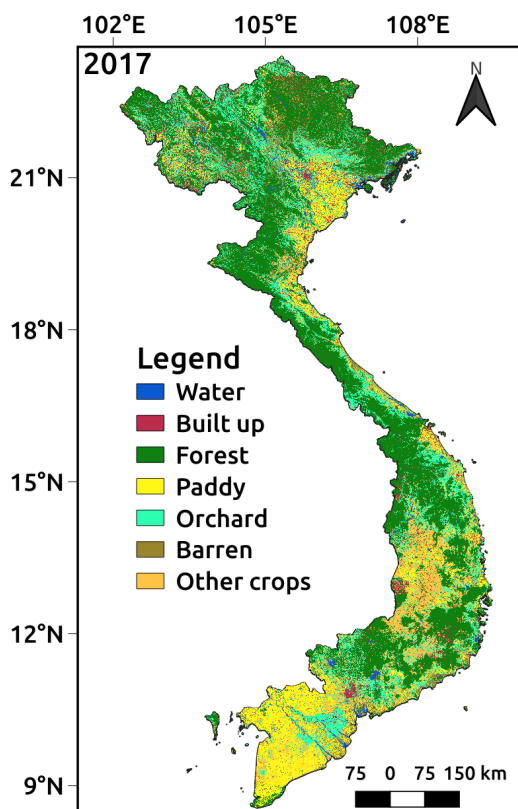
Figure S6.3. Land cover maps for Vietnam from 2015 to 2018 using multi-temporal PALSAR-2/ScanSAR, MODIS NDVI and SRTM



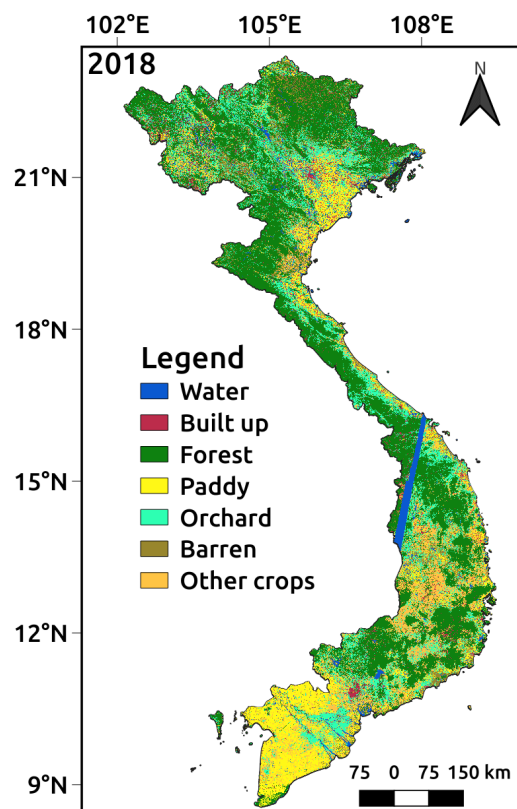
(A) Land cover map in 2015



(B) Land cover map in 2016

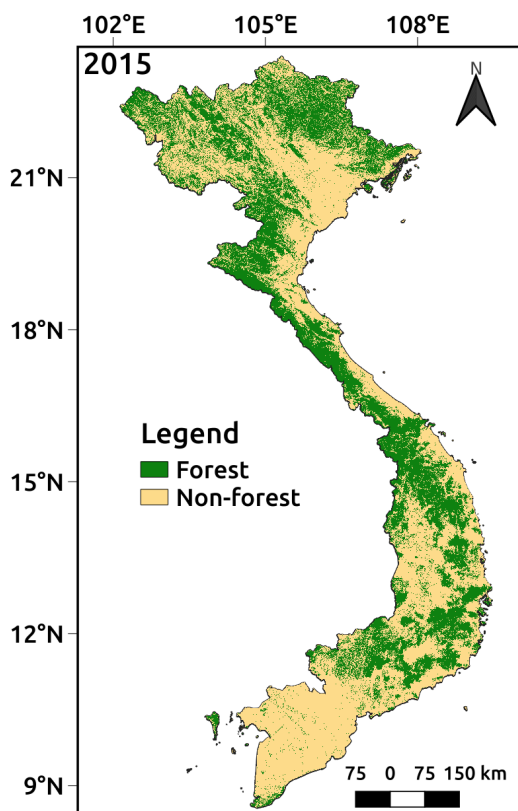


(C) Land cover map in 2017

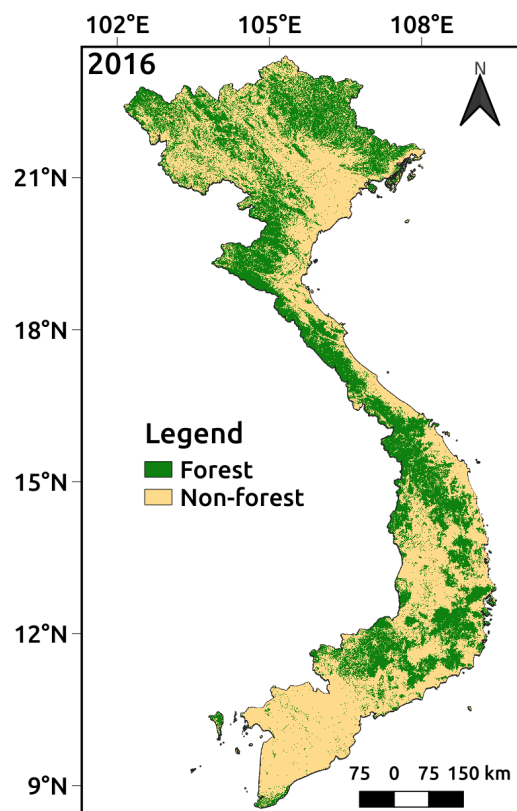


(D) Land cover map in 2018

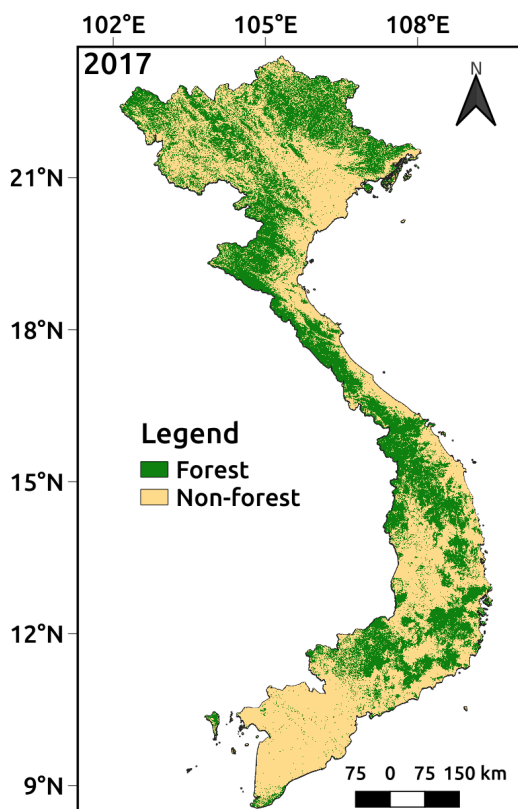
Figure S6.4. Land cover maps for Vietnam from 2015 to 2018 using only multi-temporal PALSAR-2/ScanSAR images



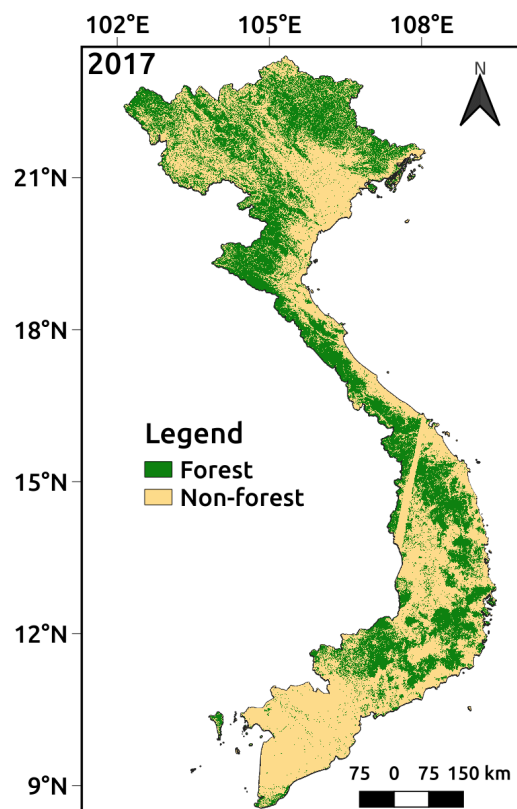
(A) Forest/non-forest map in 2015



(B) Forest/non-forest map in 2016



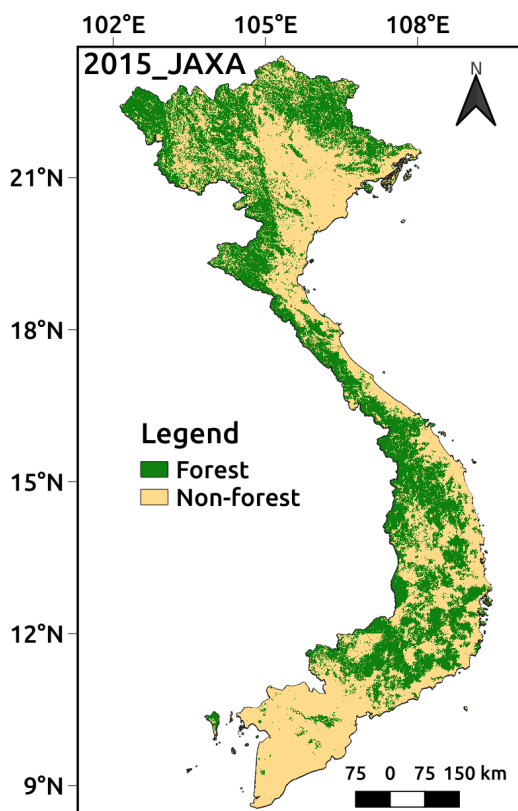
(C) Forest/non-forest map in 2017



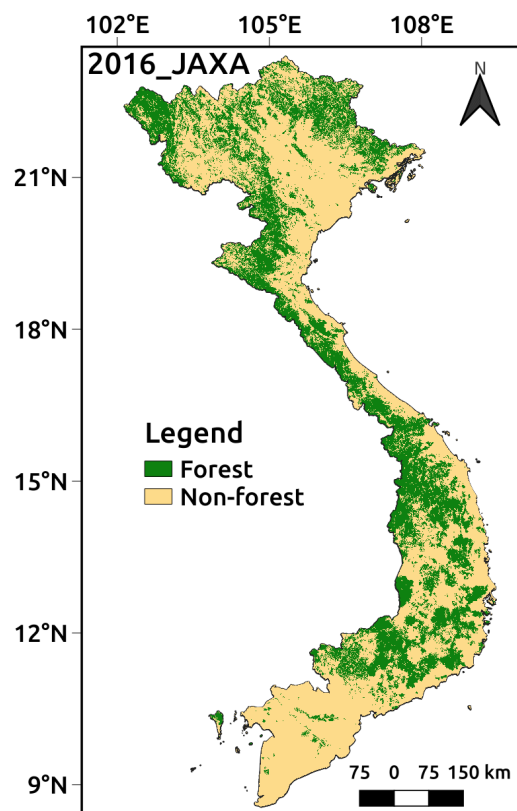
(D) Forest/non-forest map in 2018

Figure S6.5. Forest/non-forest maps for Vietnam from 2015 to 2018 using only multi-temporal PALSAR-2/ScanSAR images

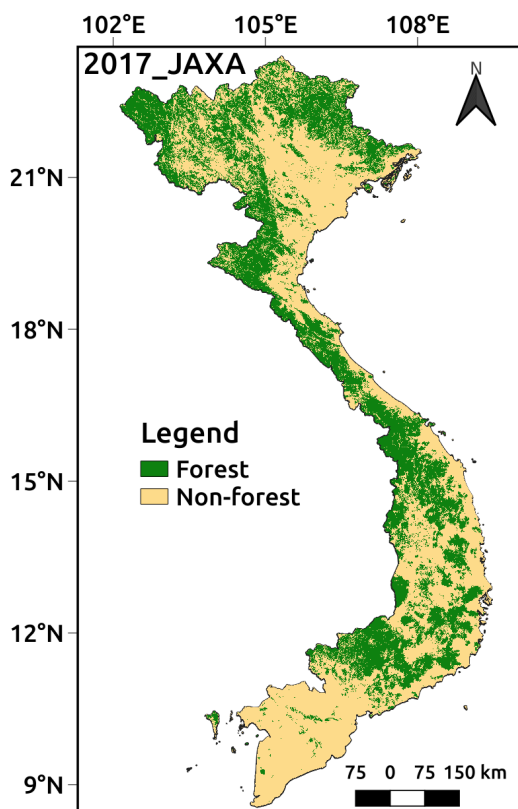




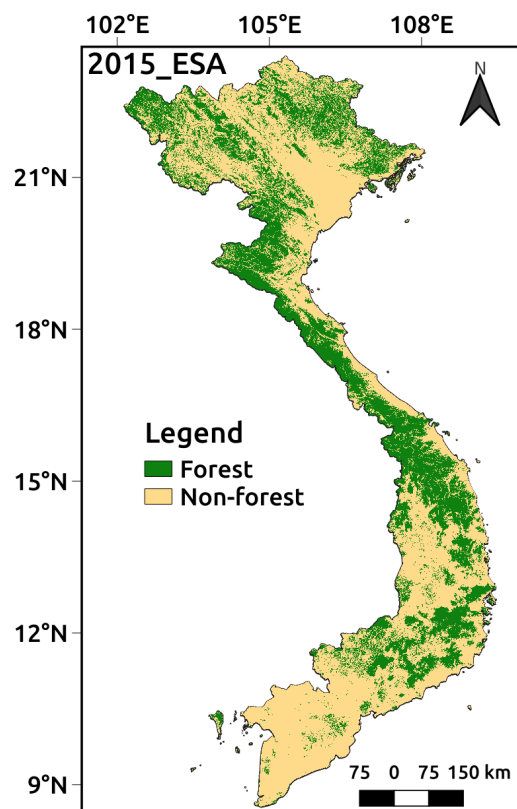
(A) JAXA forest/non-forest map in 2015



(B) JAXA forest/non-forest map in 2016



(C) JAXA forest/non-forest map in 2017



(D) ESA forest/non-forest map in 2015

Figure S6.6. Forest/non-forest maps for Vietnam from global products of JAXA (A-C) and ESA (D)