

# Supplementary Materials: Sentinel-1 Backscatter timeseries of the Study Fields

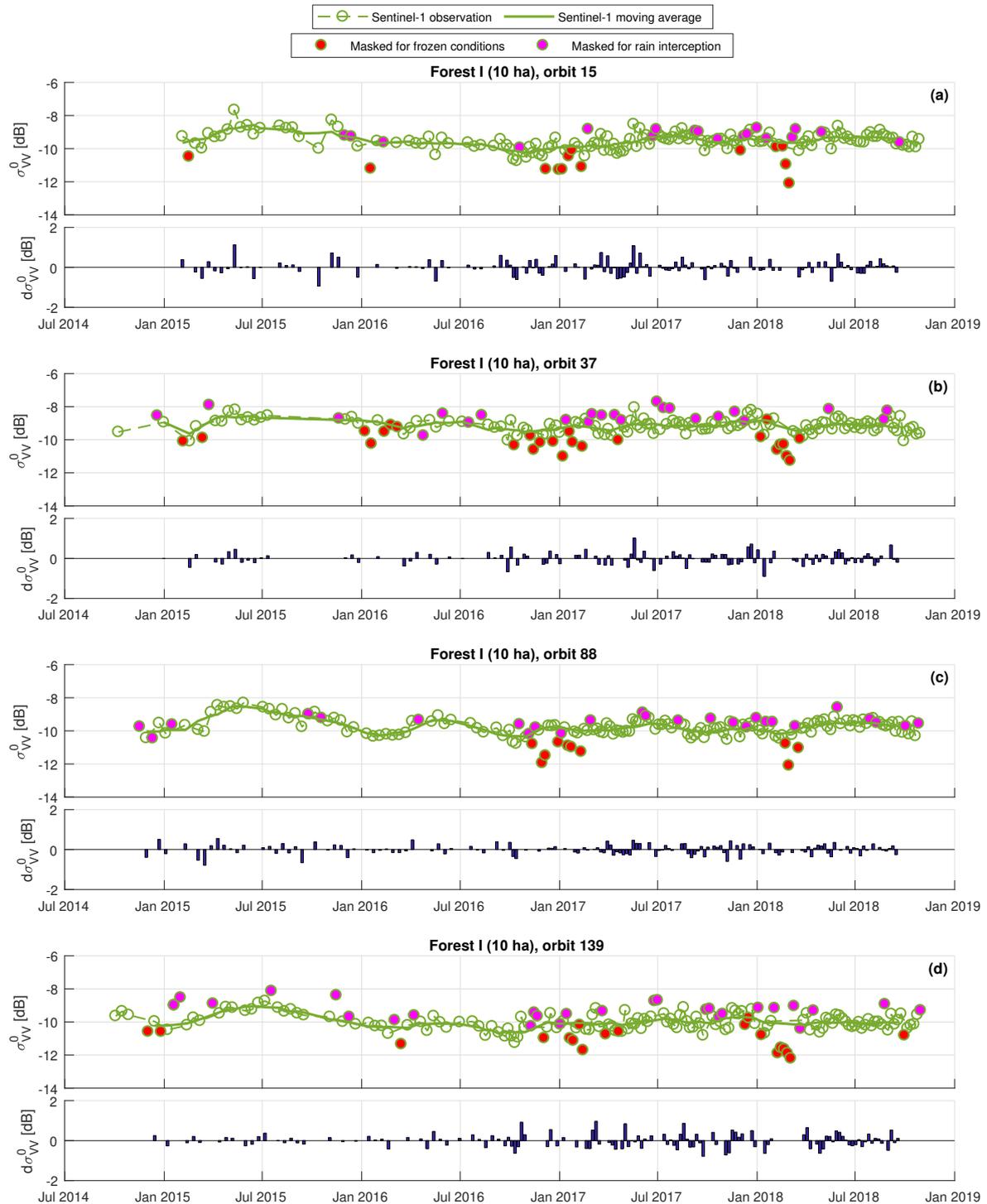
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1 This is Supplement 1 of the paper "Impacts of Radiometric Uncertainty and Weather-Related  
2 Surface Conditions on Soil Moisture Retrievals with Sentinel-1" in the journal Remote Sensing. This  
3 supplement contains the timeseries figures of Sentinel-1 backscatter and the calculated moving  
4 averages for the study fields.

5 Supplement 2 contains the processed research data in tables.

## 6 1. Sentinel-1 Backscatter timeseries of the Forest Areas

### 7 1.1. VV Backscatter Observations



**Figure S1.** Forest I Sentinel-1 VV backscatter observations ( $\sigma_{VV}^0$ ) and anomalies with the moving average ( $d\sigma^0$ ) calculated with Equation 1 in the paper using a moving average window of 40 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

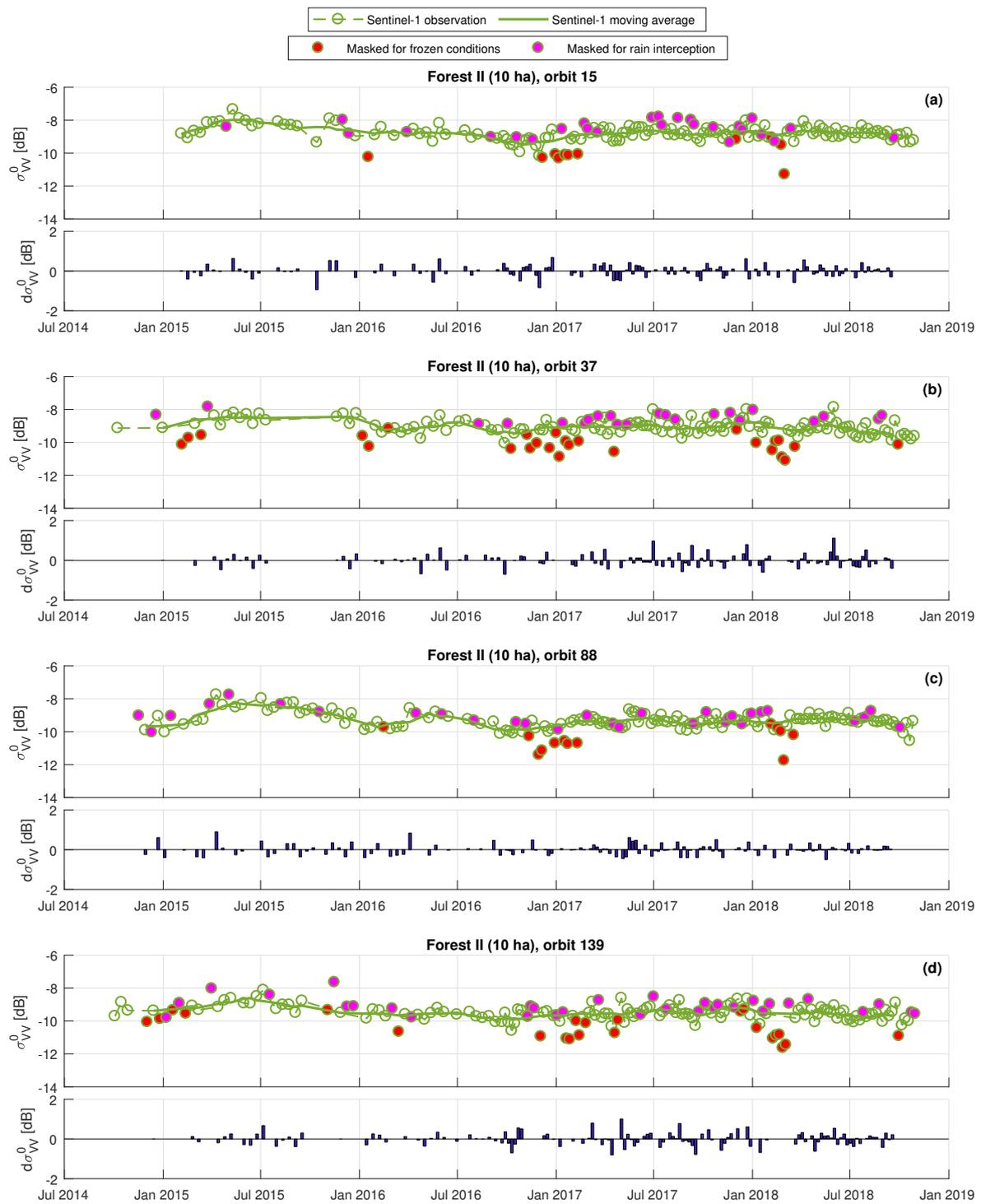


Figure S2. Same as Figure S1, for forest II.

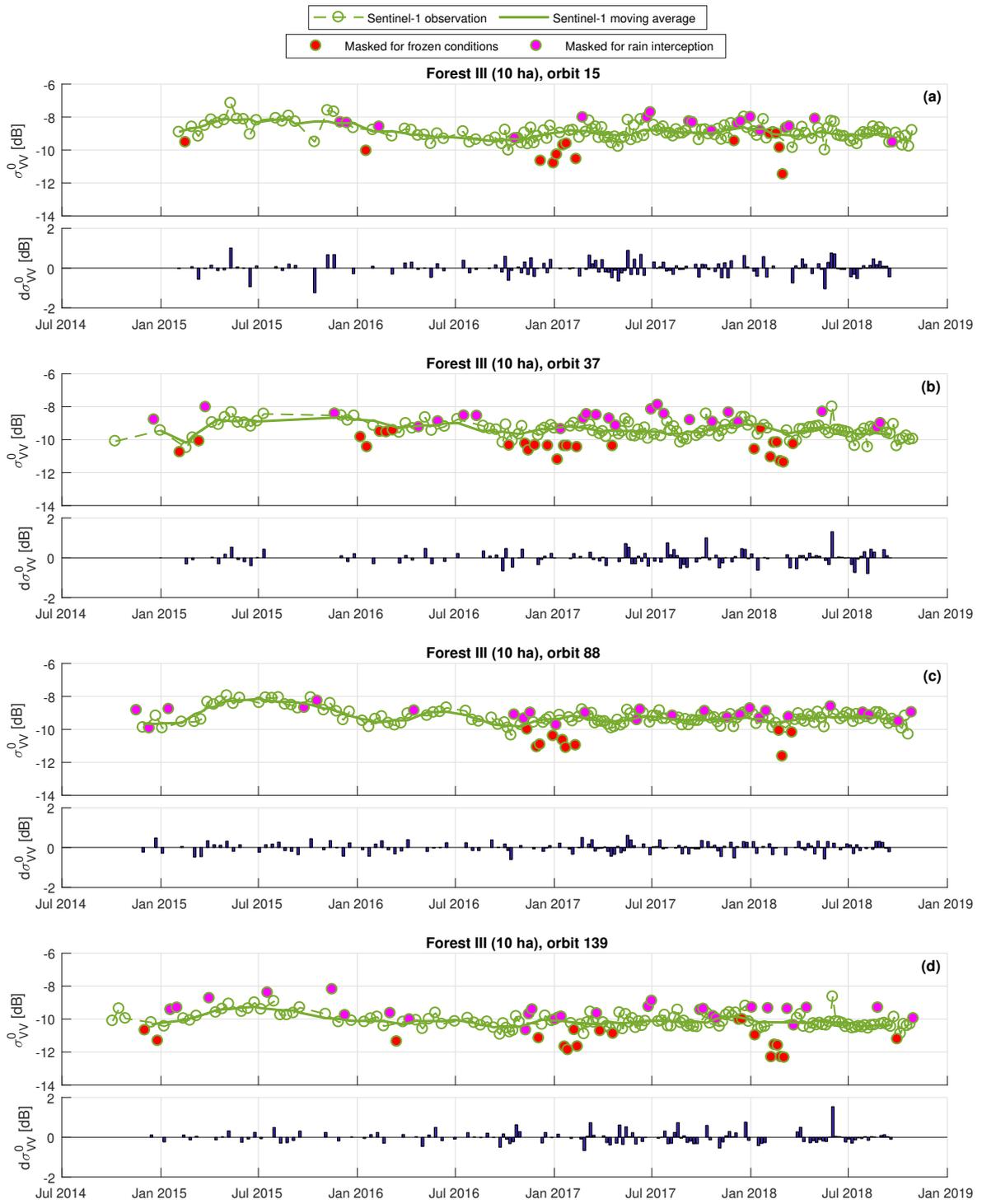
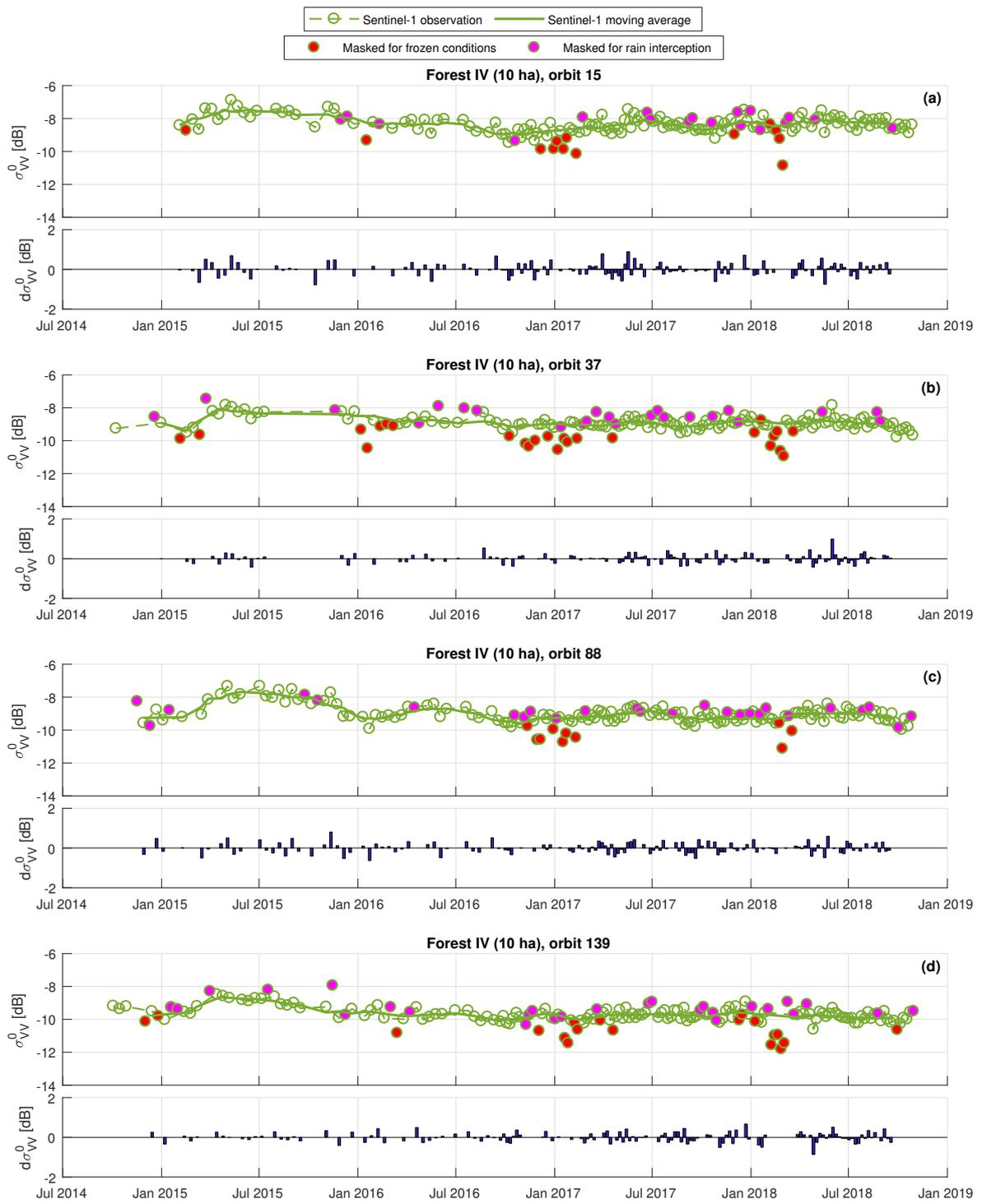


Figure S3. Same as Figure S1, for forest III.



**Figure S4.** Same as Figure S1, for forest IV.

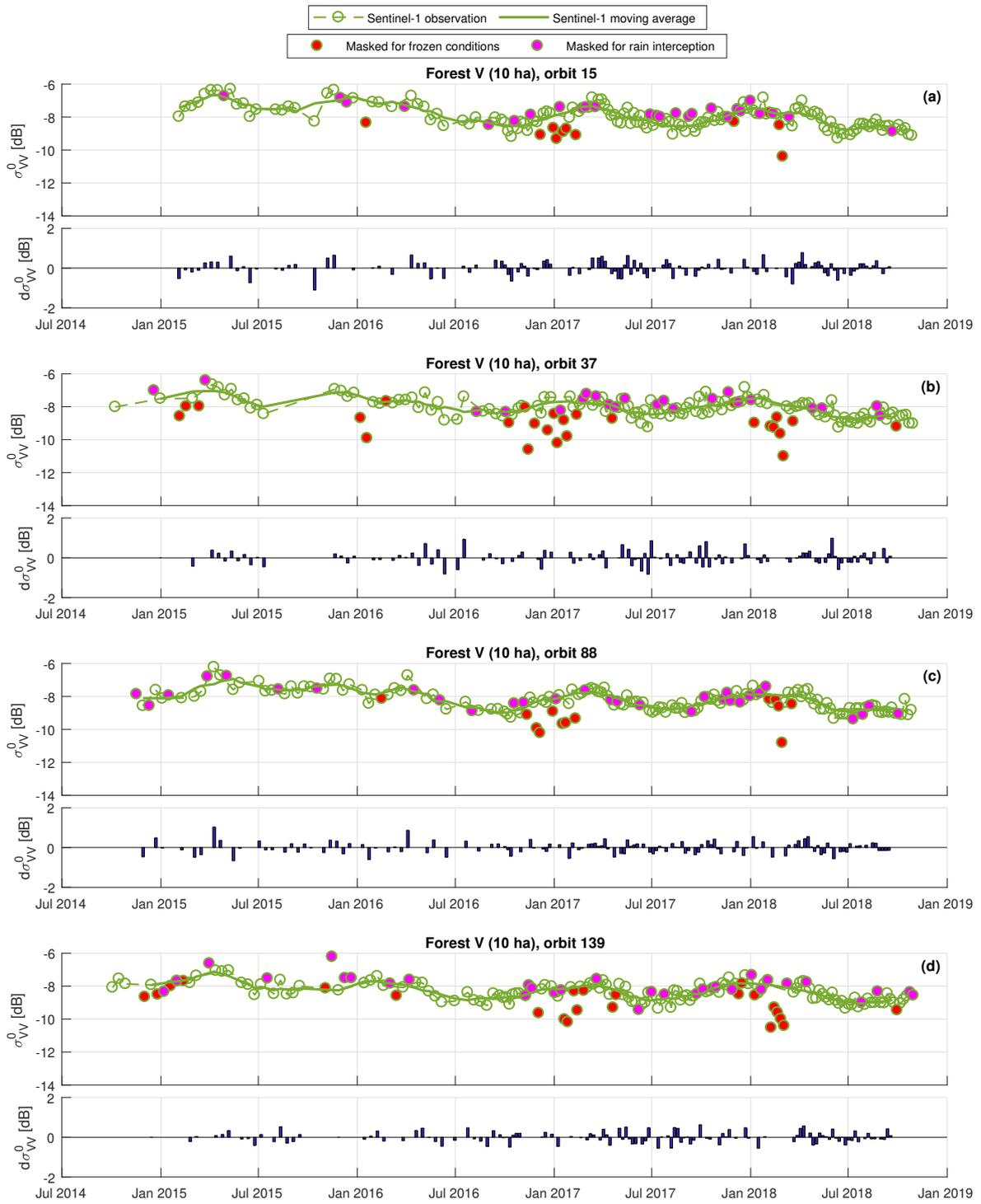
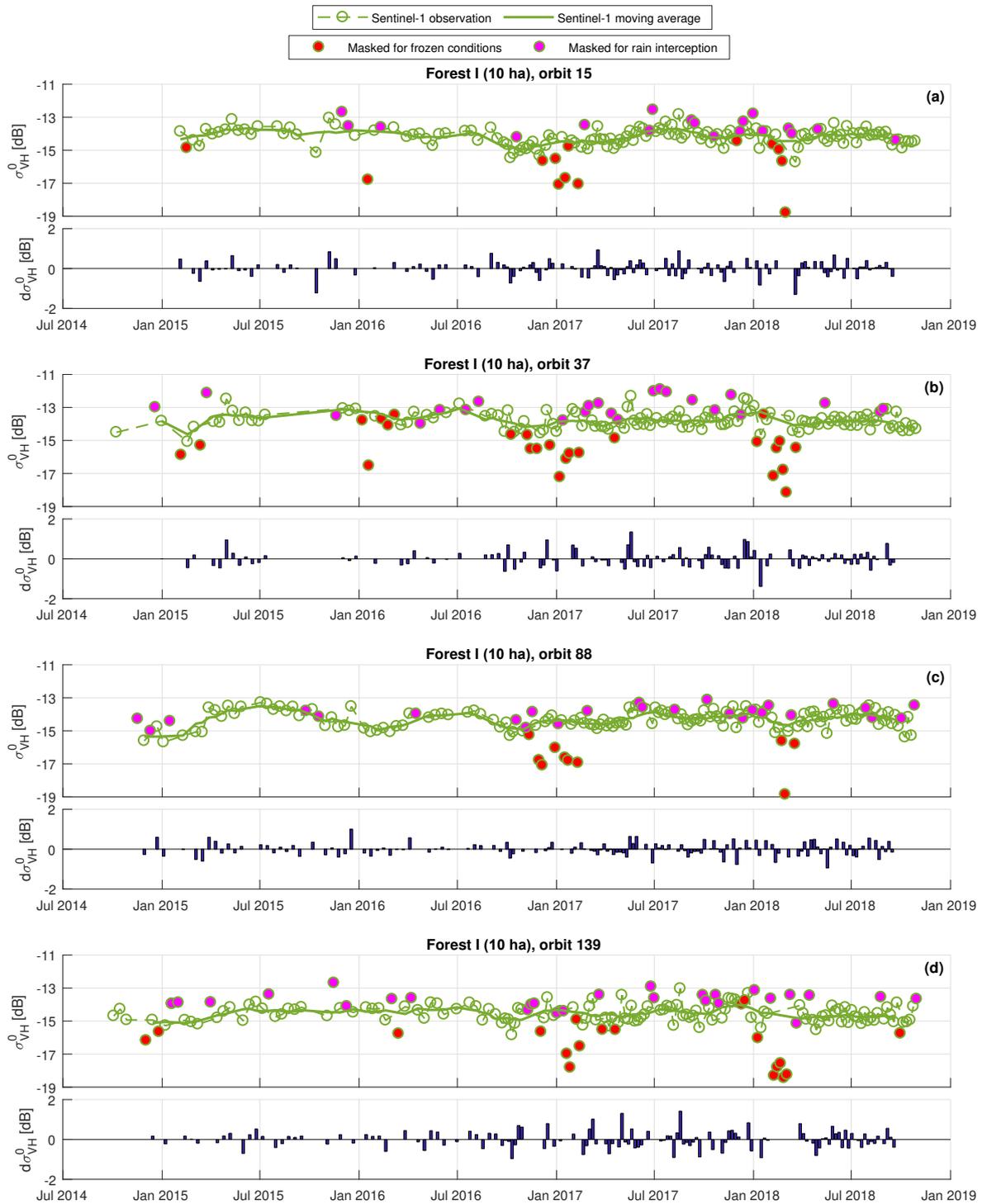


Figure S5. Same as Figure S1, for forest V.

8 1.2. VH Backscatter Observations



**Figure S6.** Forest I Sentinel-1 VH backscatter observations ( $\sigma_{VH}^0$ ) and anomalies with the moving average ( $d\sigma^0$ ) calculated with Equation 1 in the paper using a moving average window of 40 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

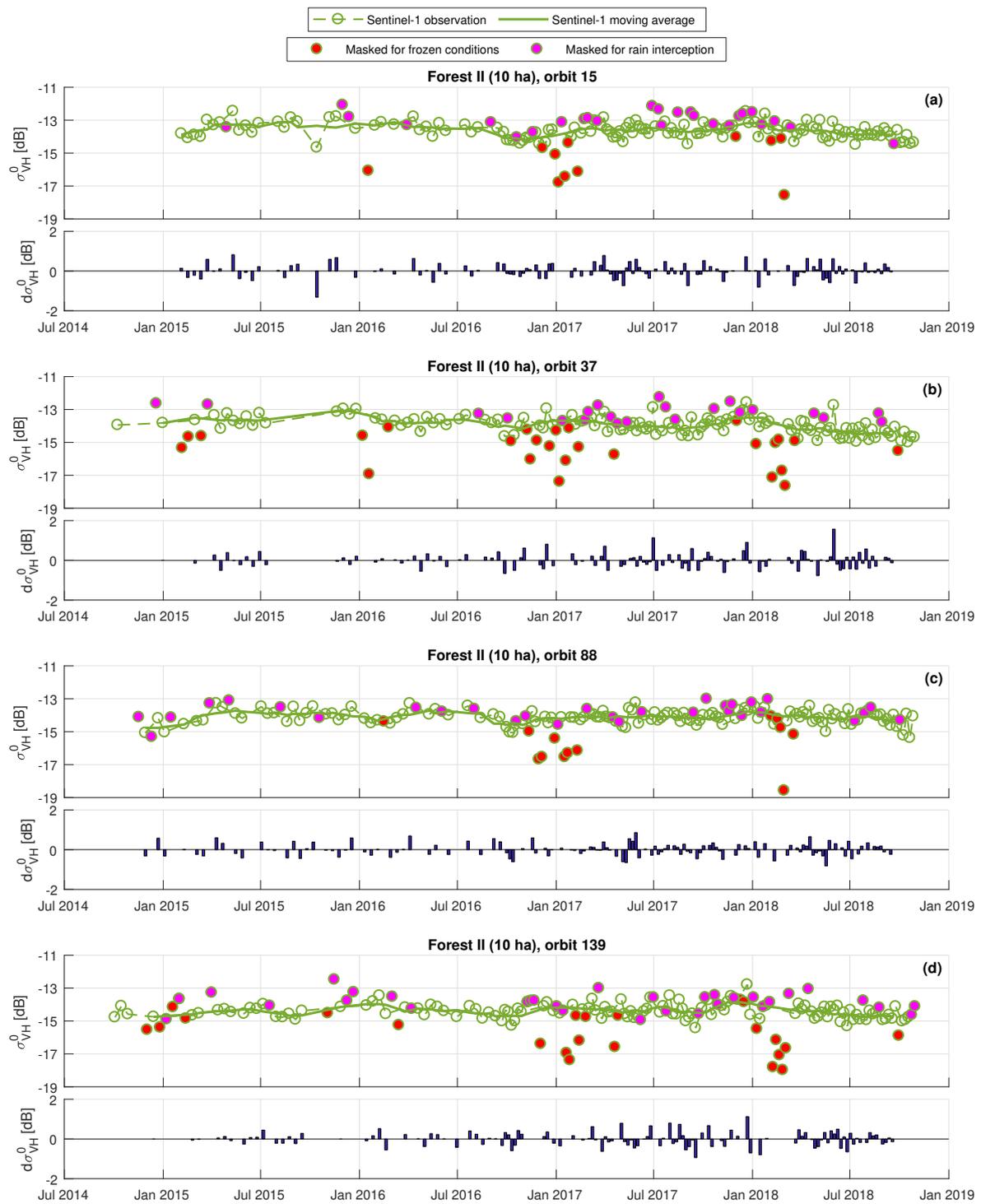


Figure S7. Same as Figure S6, for forest II.

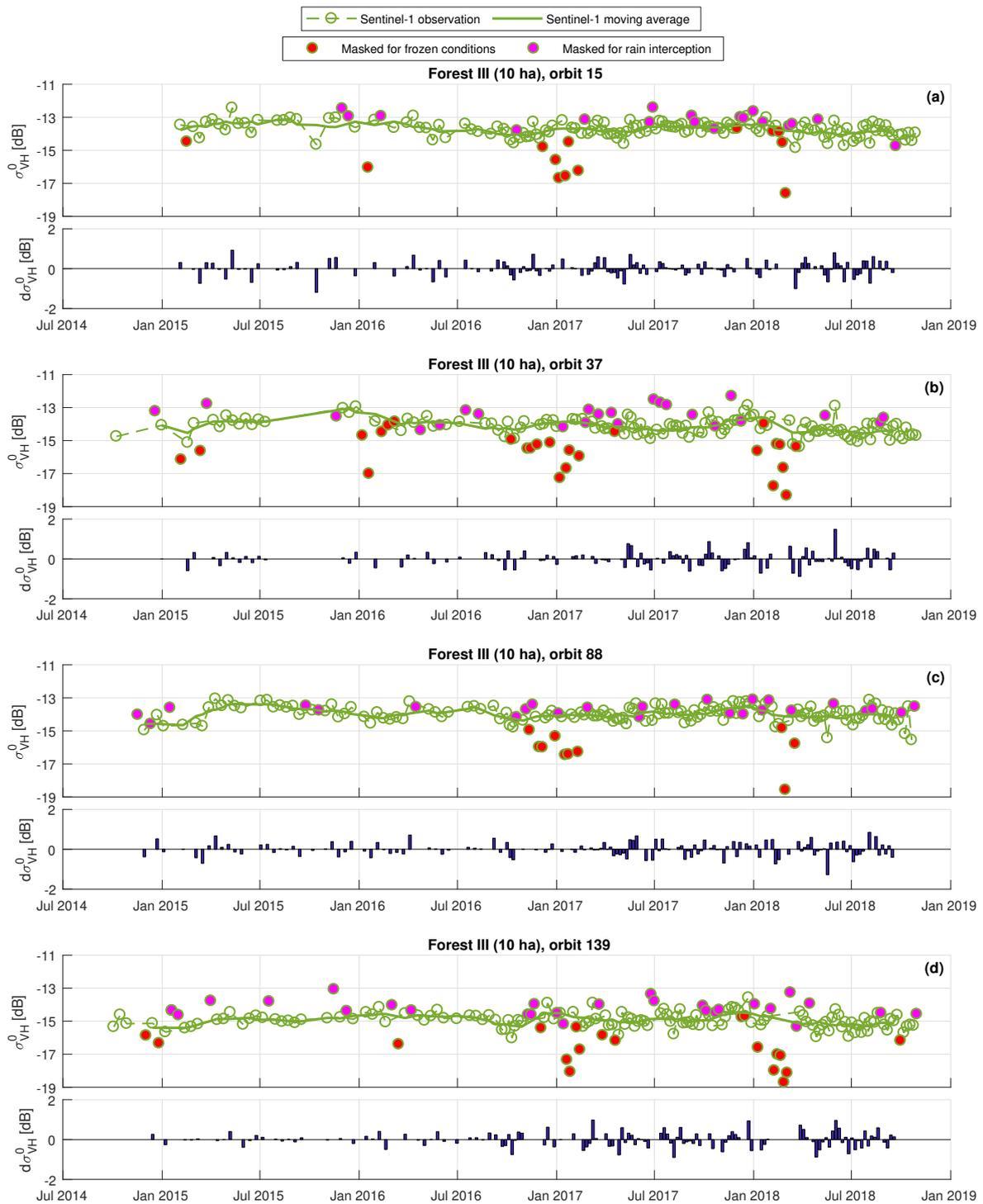


Figure S8. Same as Figure S6, for forest III.

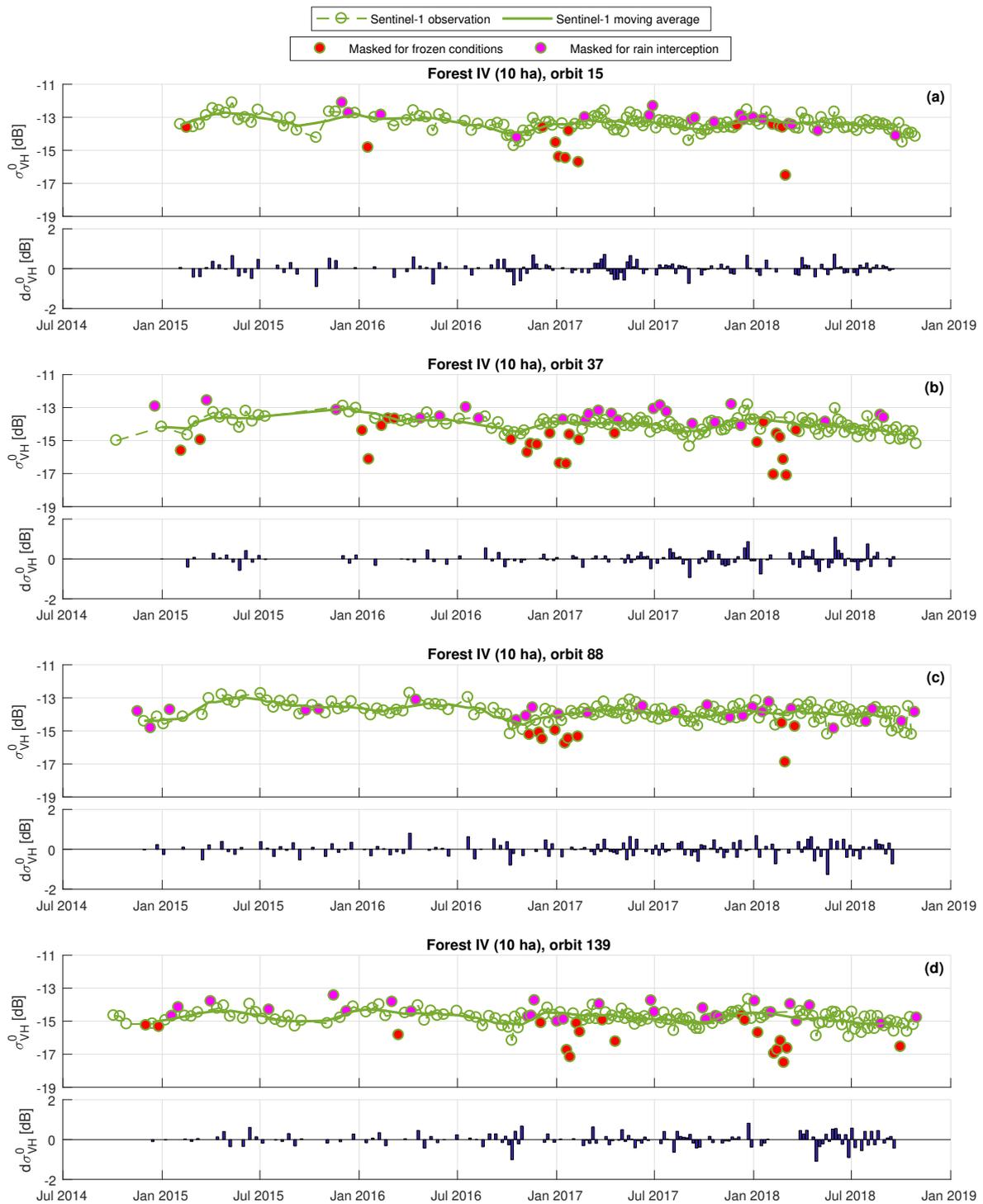


Figure S9. Same as Figure S6, for forest IV.

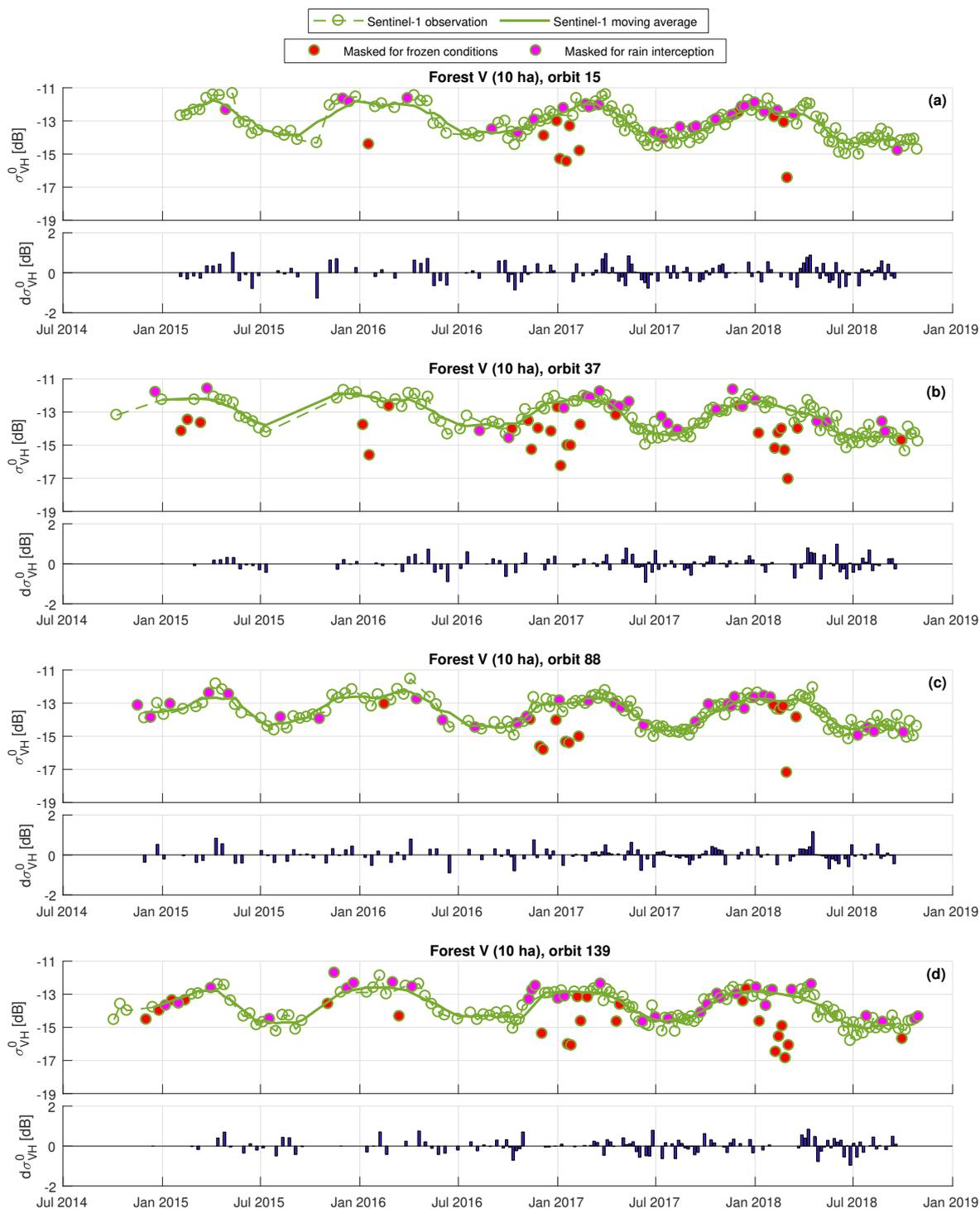
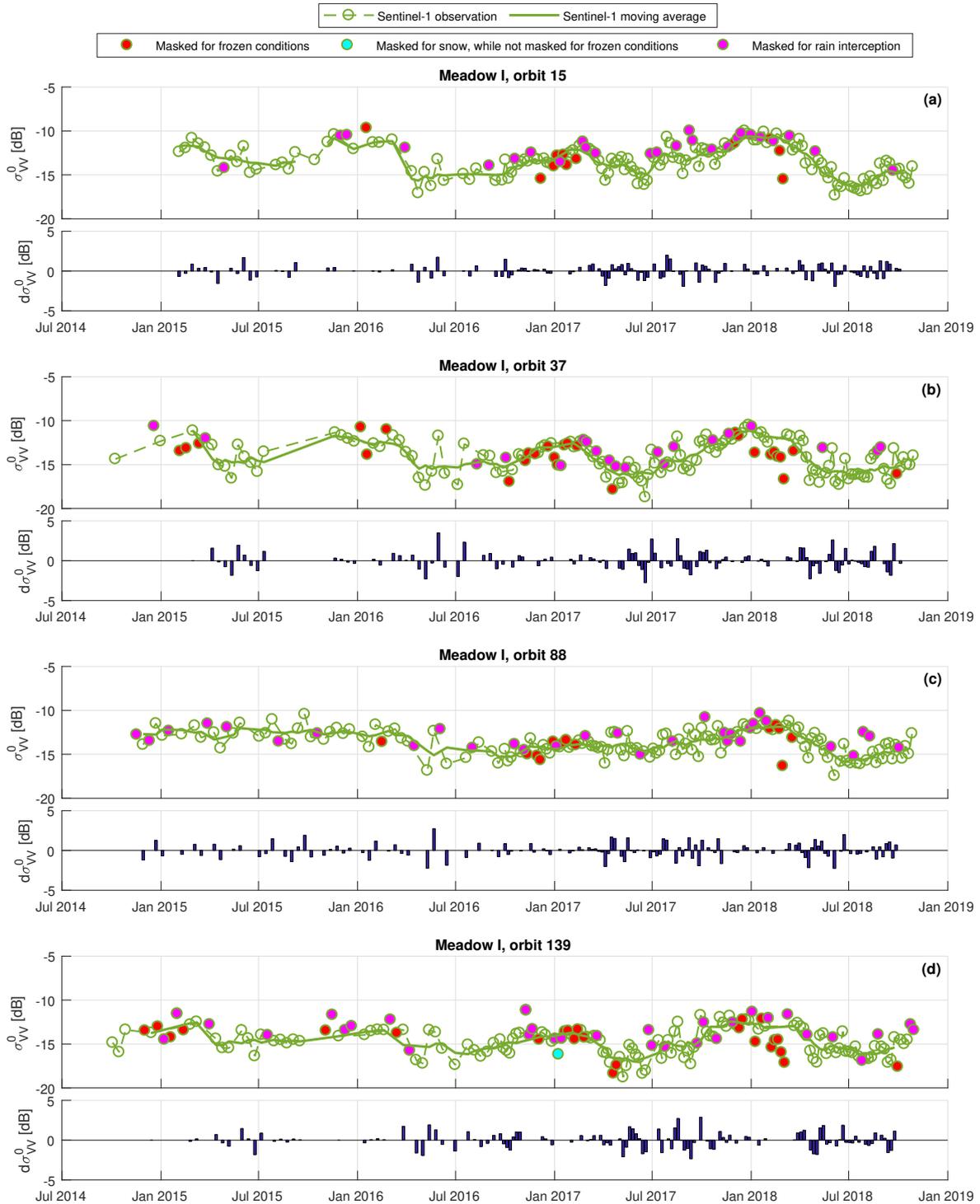


Figure S10. Same as Figure S6, for forest V.

## 9 2. Sentinel-1 Backscatter timeseries of the Meadows

### 10 2.1. VV Backscatter Observations



**Figure S11.** Meadow I Sentinel-1 VV backscatter observations ( $\sigma_{VV}^0$ ) and anomalies with the moving average ( $d\sigma_{VV}^0$ ) calculated with Equation 1 in the paper using a moving average window of 25 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

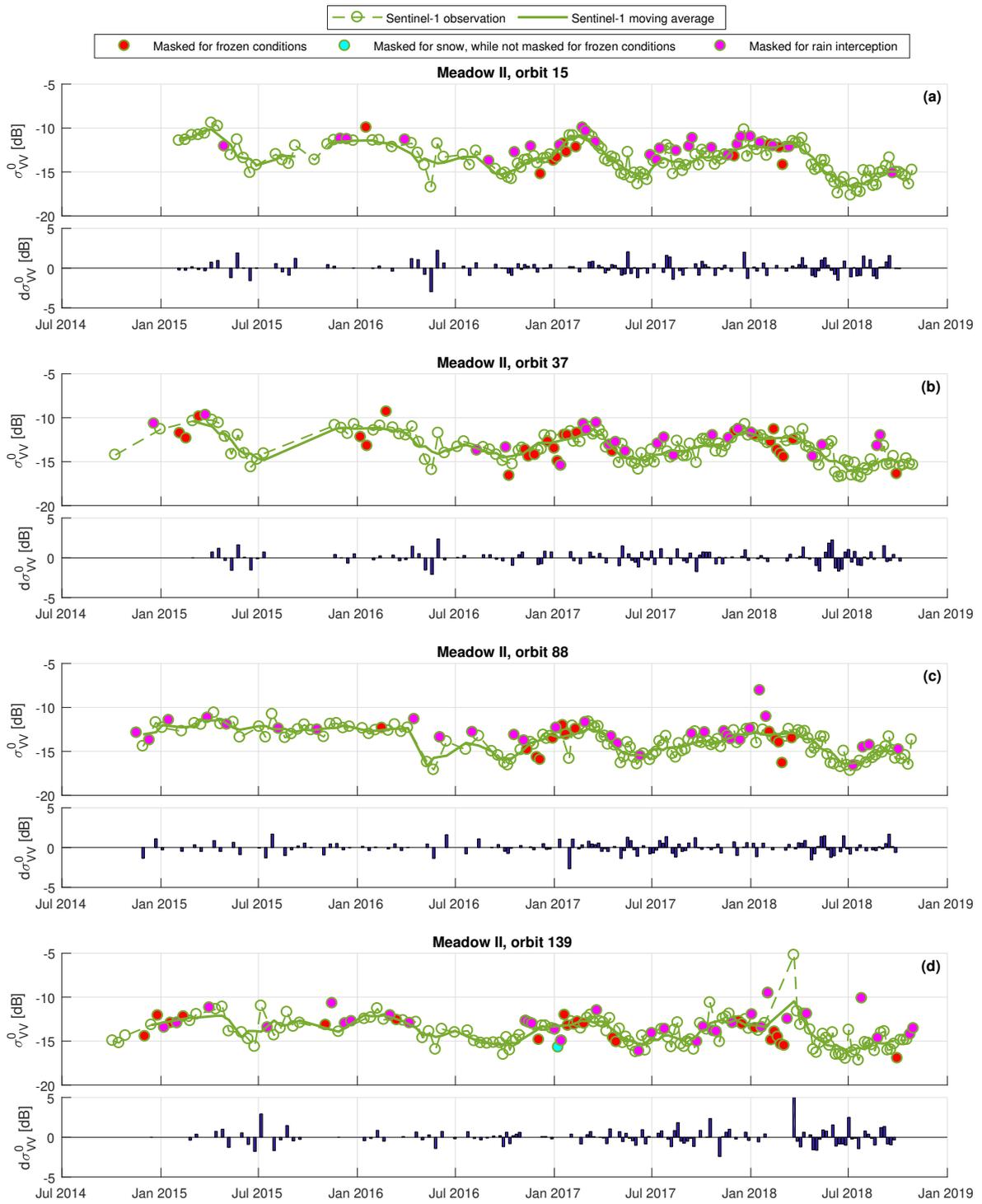


Figure S12. Same as Figure S11, for meadow II.

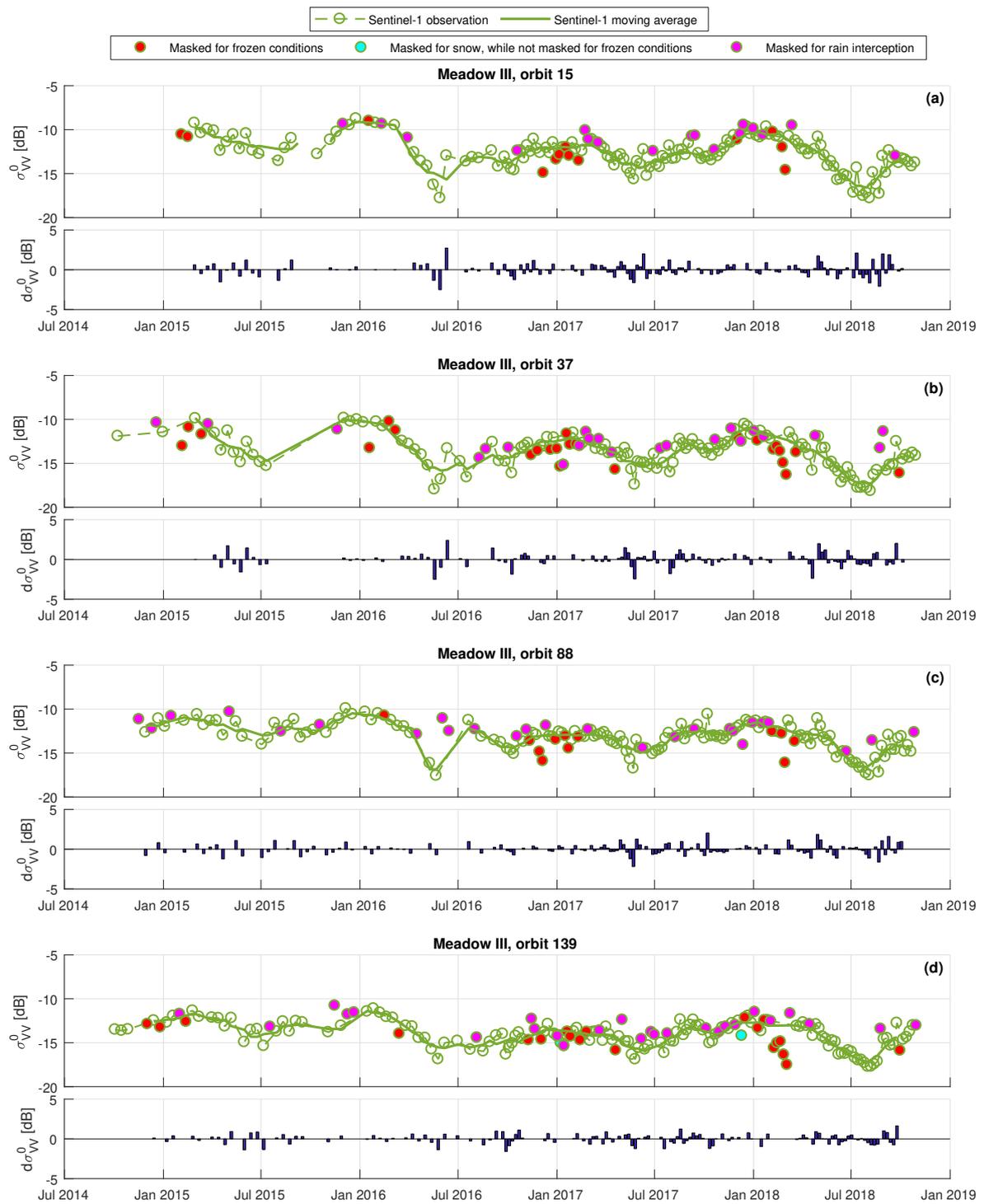


Figure S13. Same as Figure S11, for meadow III.

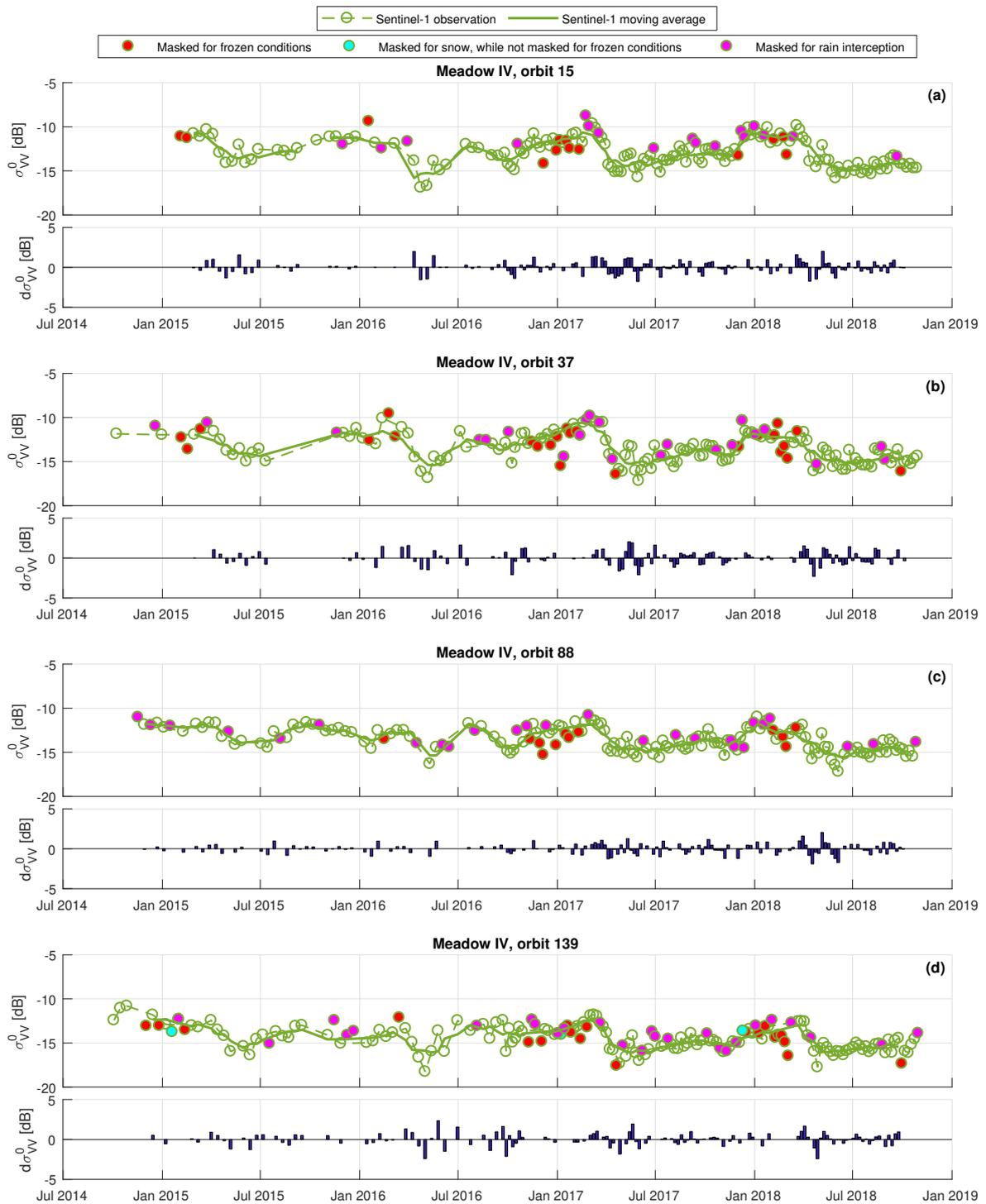


Figure S14. Same as Figure S11, for meadow IV.

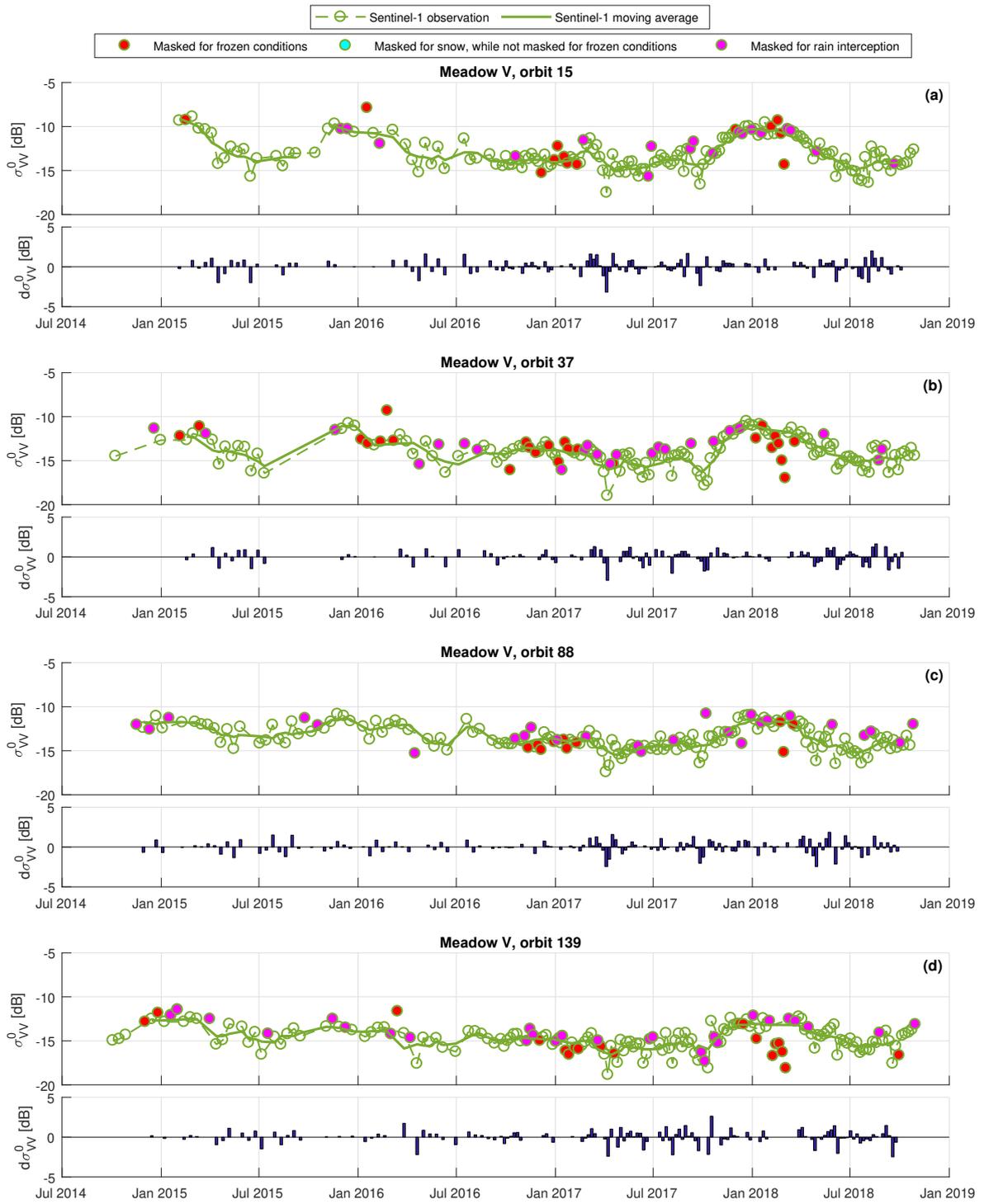
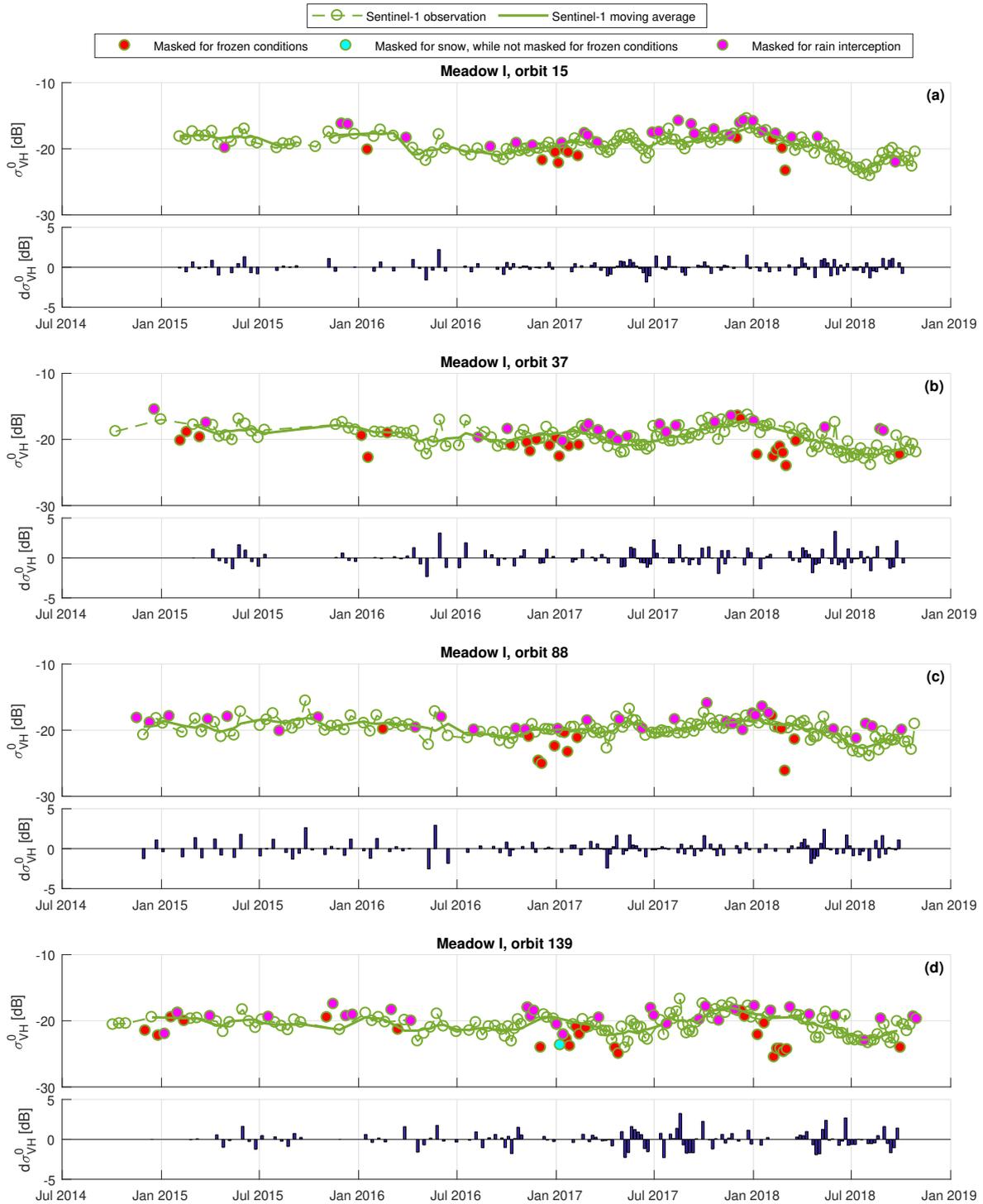


Figure S15. Same as Figure S11, for meadow V.

11 2.2. *VH Backscatter Observations*

**Figure S16.** Meadow I Sentinel-1 VH backscatter observations ( $\sigma_{VH}^0$ ) and anomalies with the moving average ( $d\sigma^0$ ) calculated with Equation 1 in the paper using a moving average window of 25 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

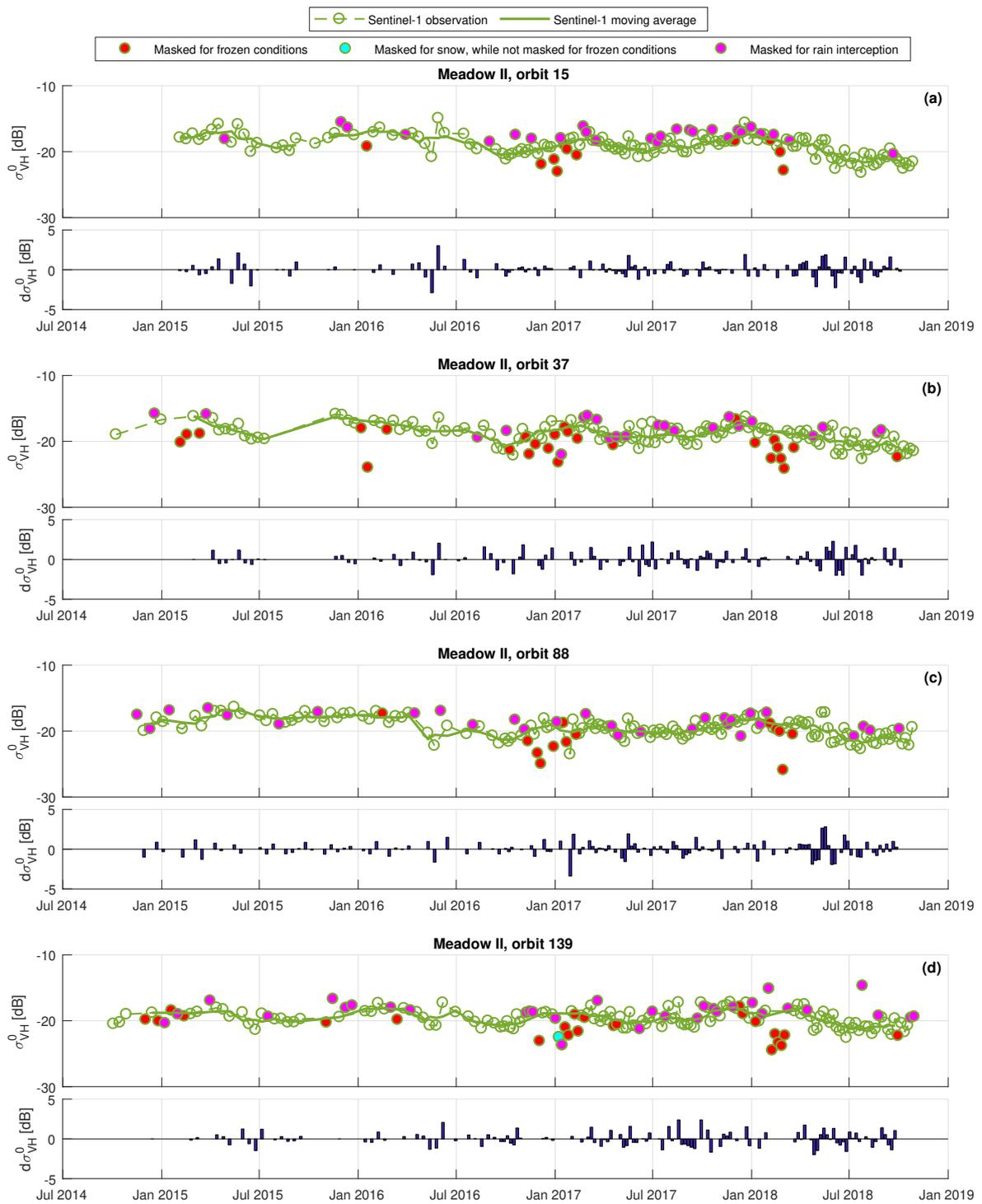


Figure S17. Same as Figure S16, for meadow II.

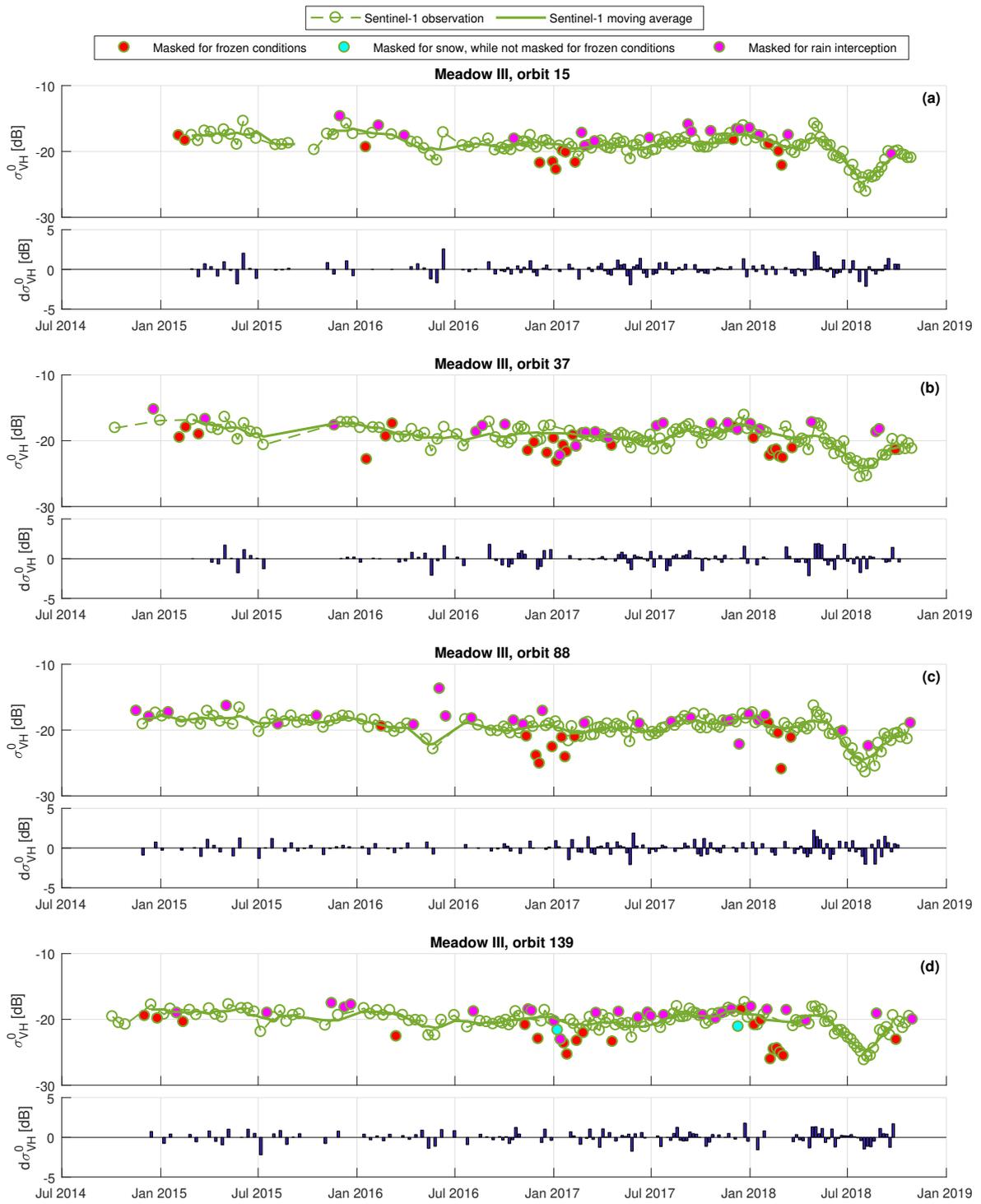


Figure S18. Same as Figure S16, for meadow III.

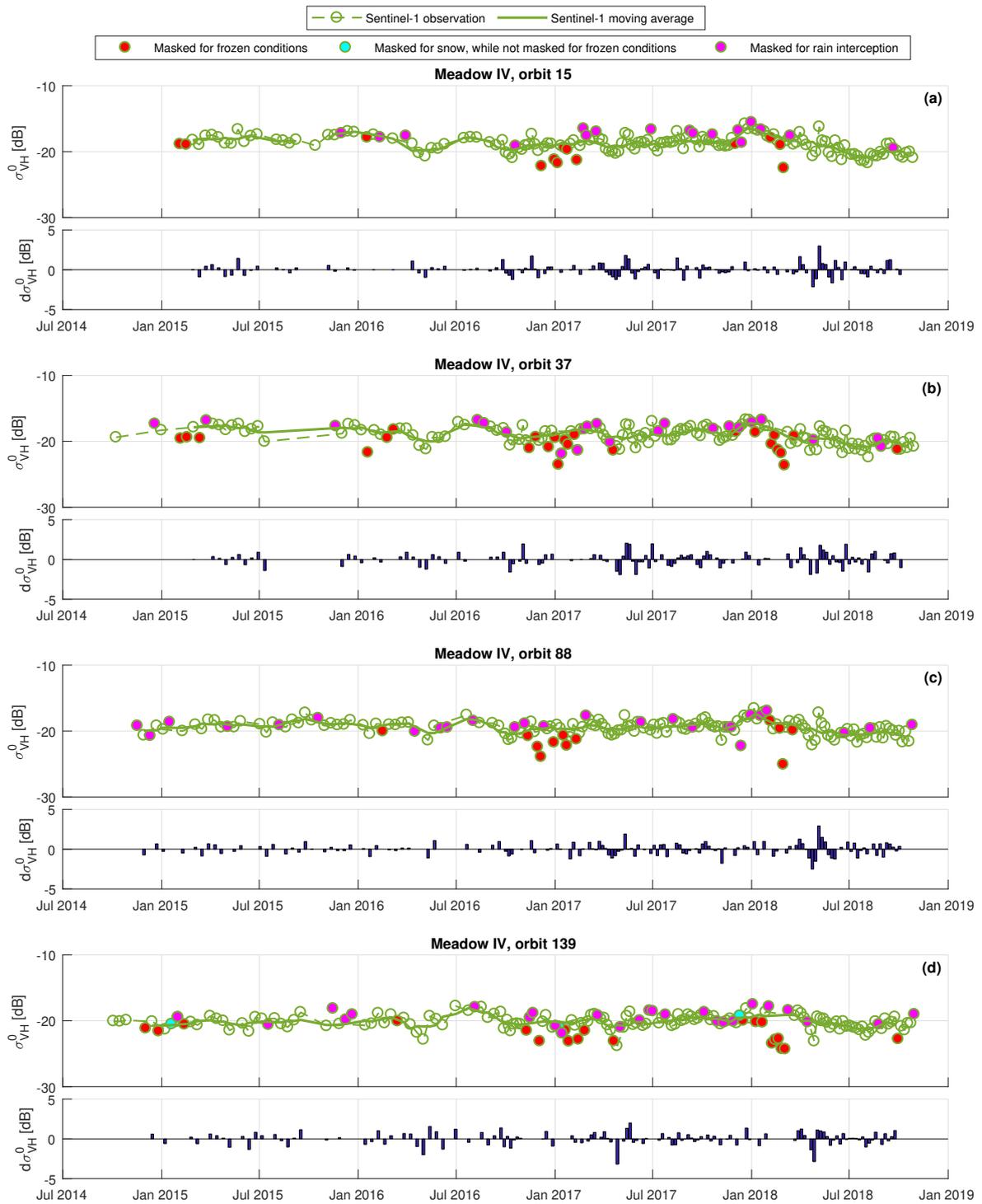


Figure S19. Same as Figure S16, for meadow IV.

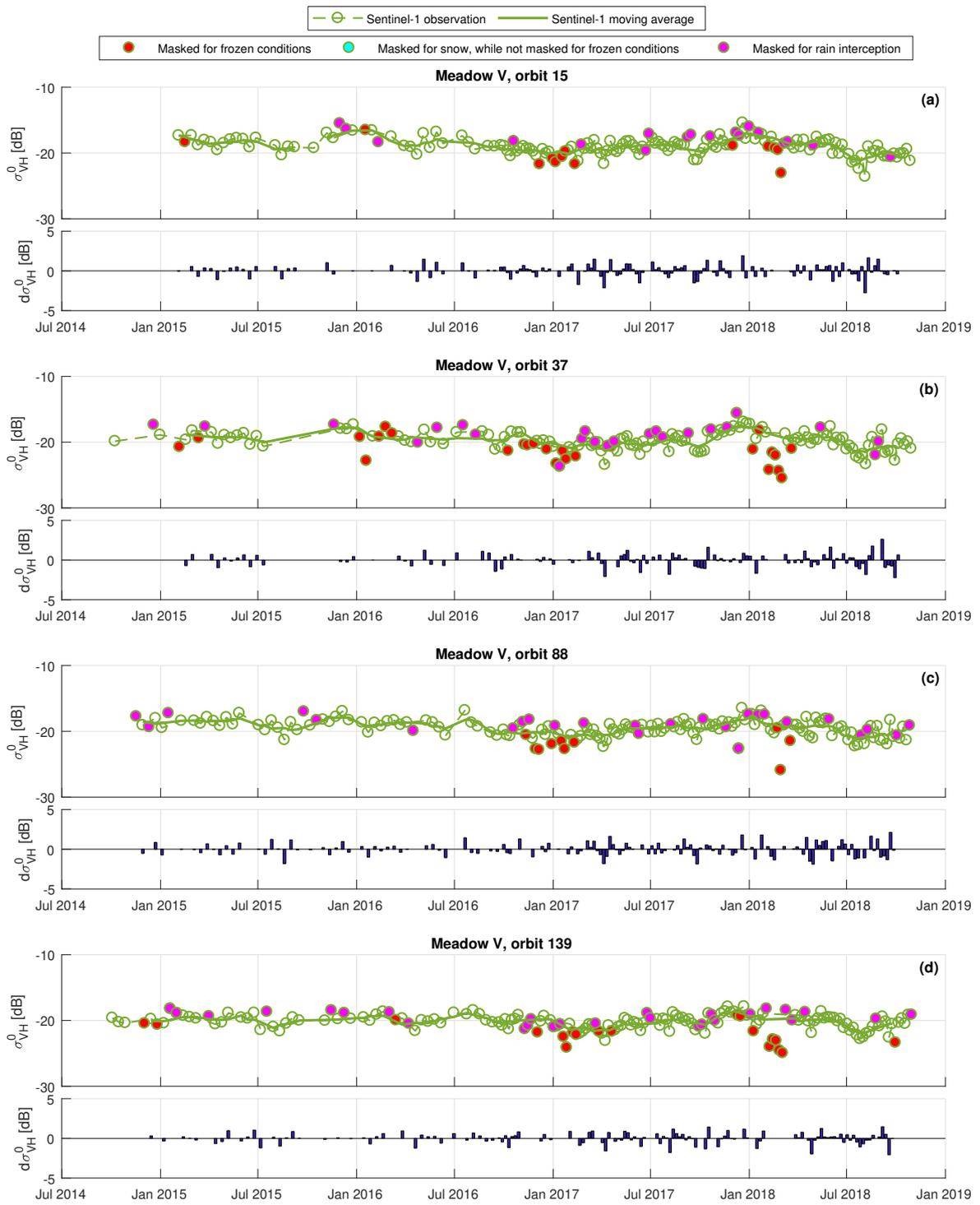
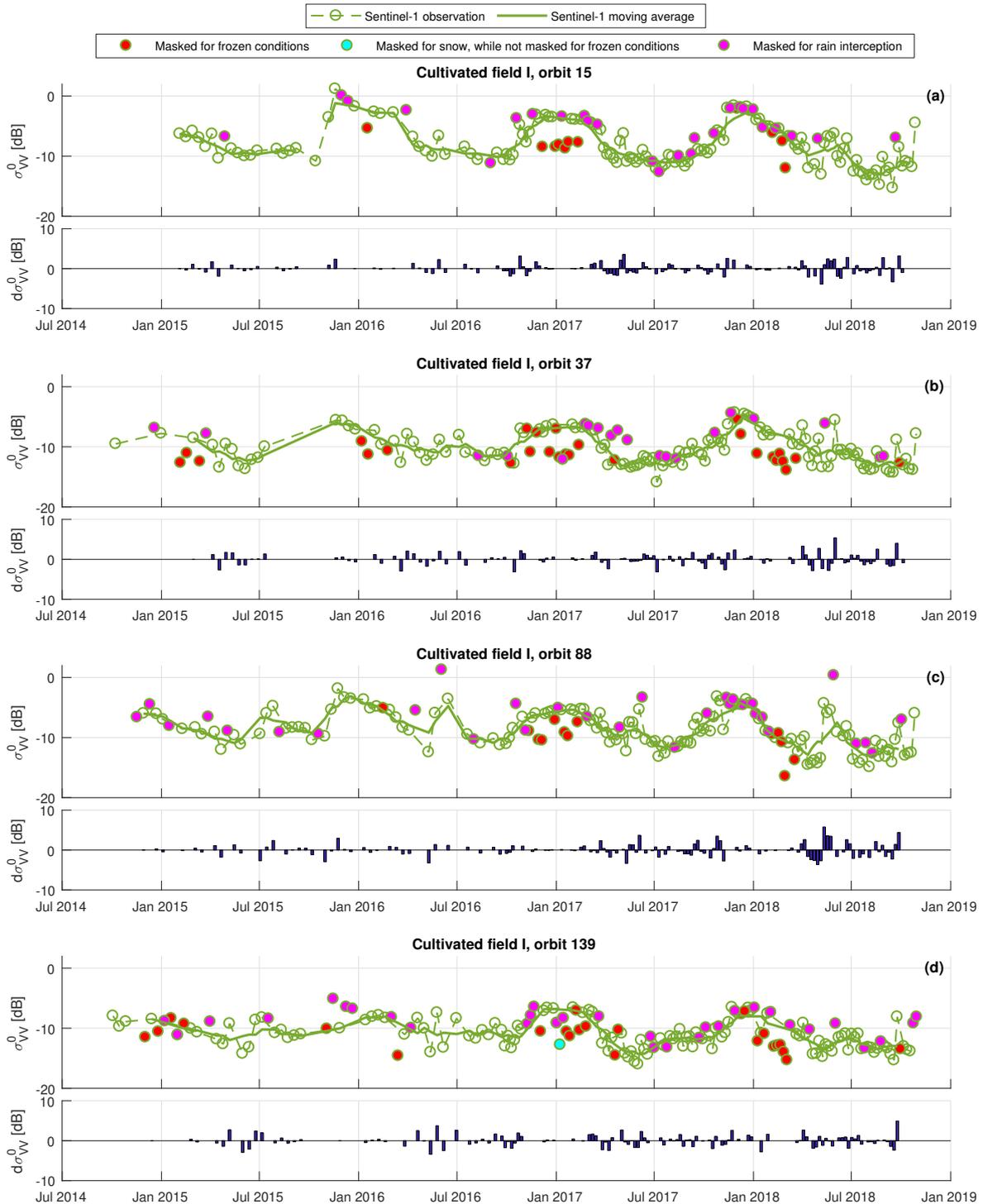


Figure S20. Same as Figure S16, for meadow V.

## 12 3. Sentinel-1 Backscatter timeseries of the Cultivated Fields

### 13 3.1. VV Backscatter Observations



**Figure S21.** Cultivated field I Sentinel-1 VV backscatter observations ( $\sigma_{VV}^0$ ) and anomalies with the moving average ( $d\sigma^0$ ) calculated with Equation 1 in the paper using a moving average window of 25 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

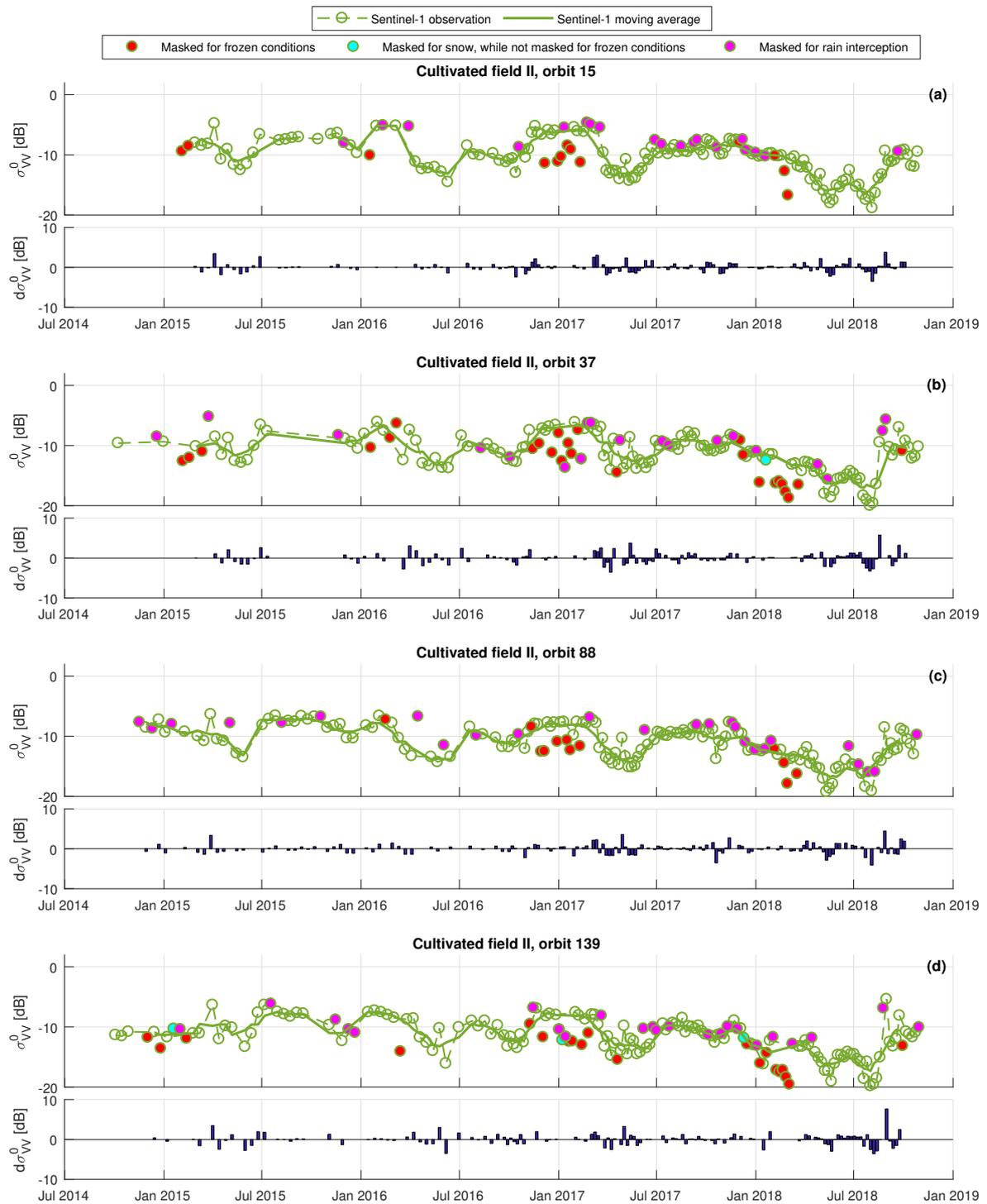


Figure S22. Same as Figure S21, for cultivated field II.

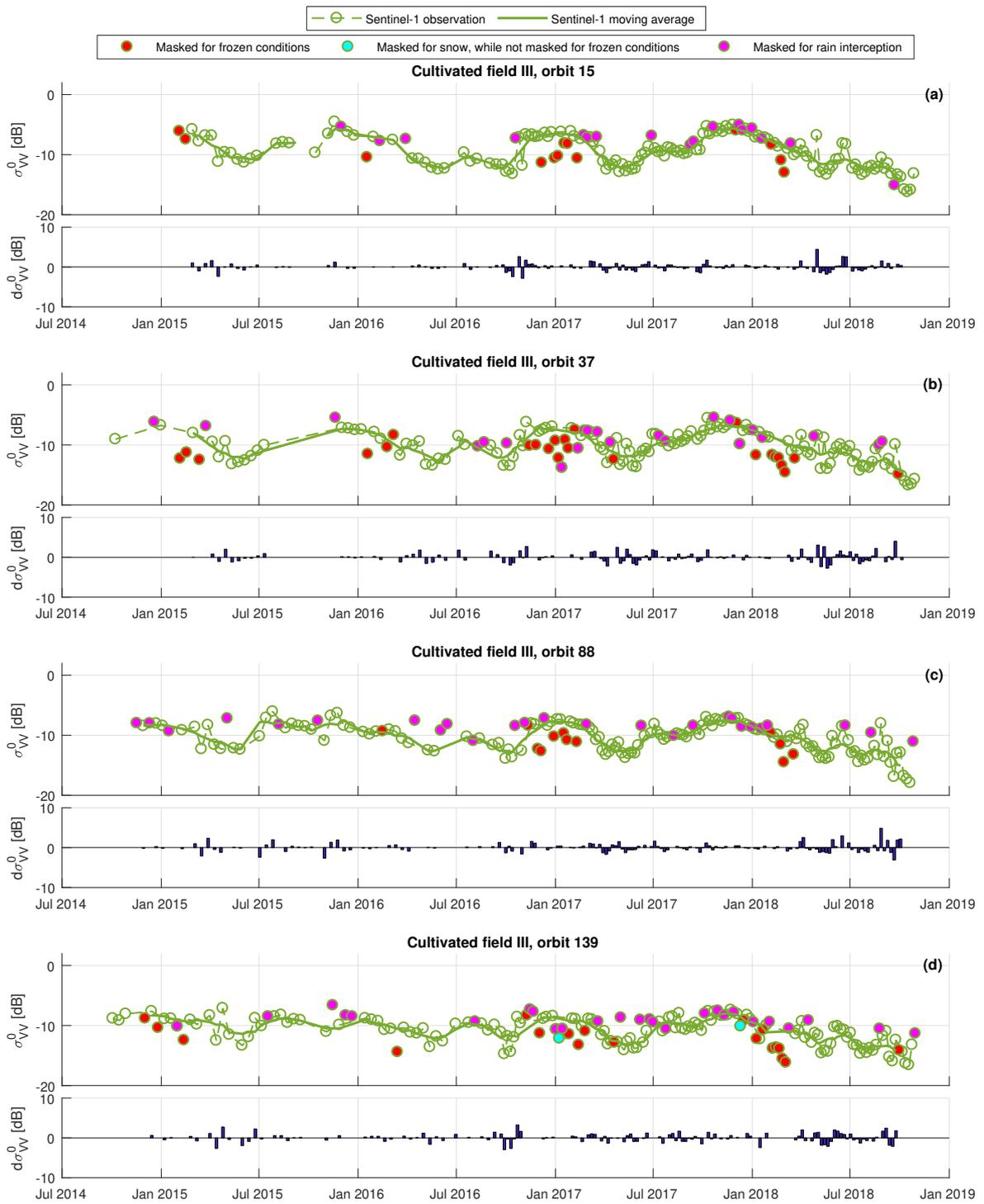


Figure S23. Same as Figure S21, for cultivated field III.

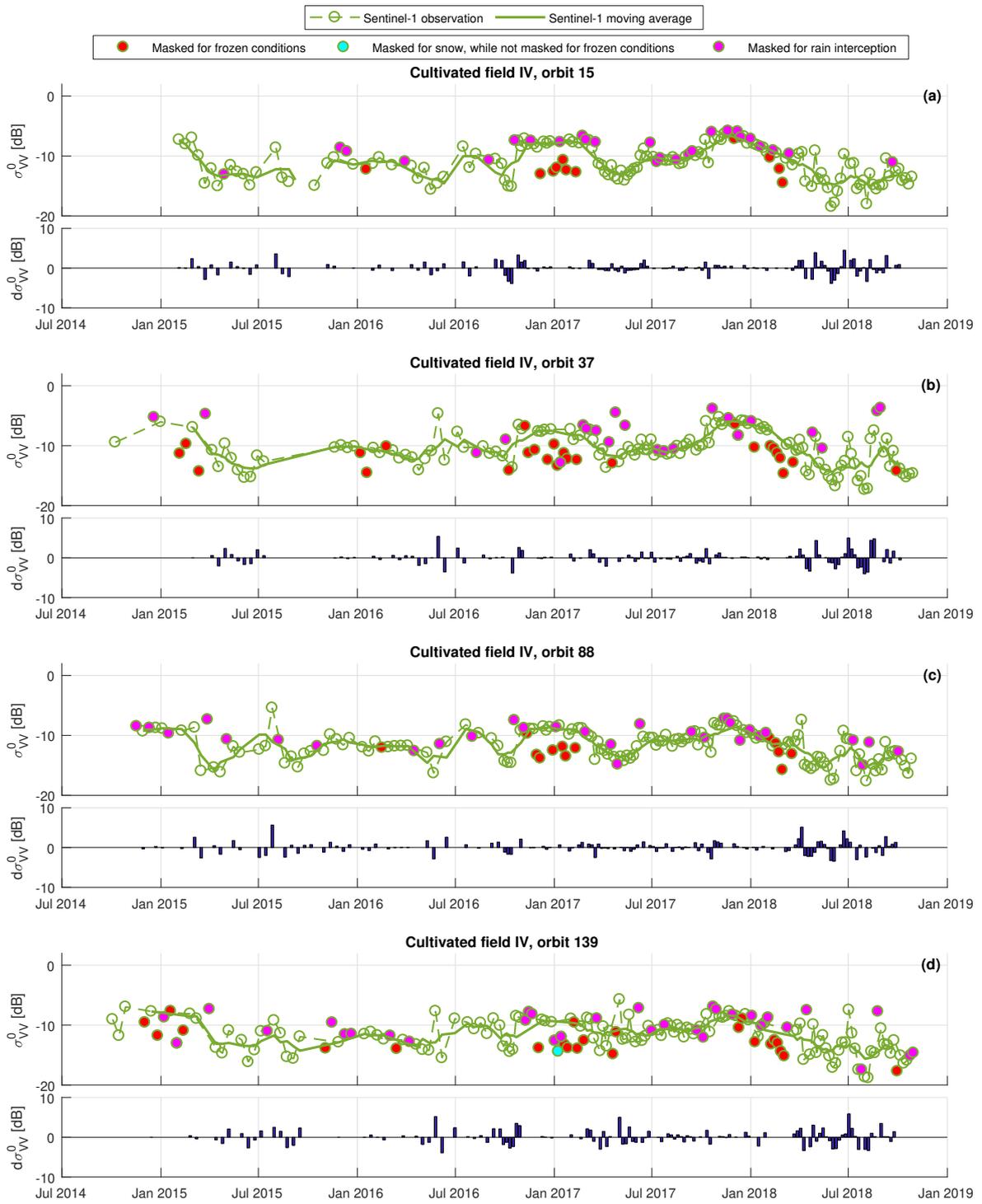


Figure S24. Same as Figure S21, for cultivated field IV.

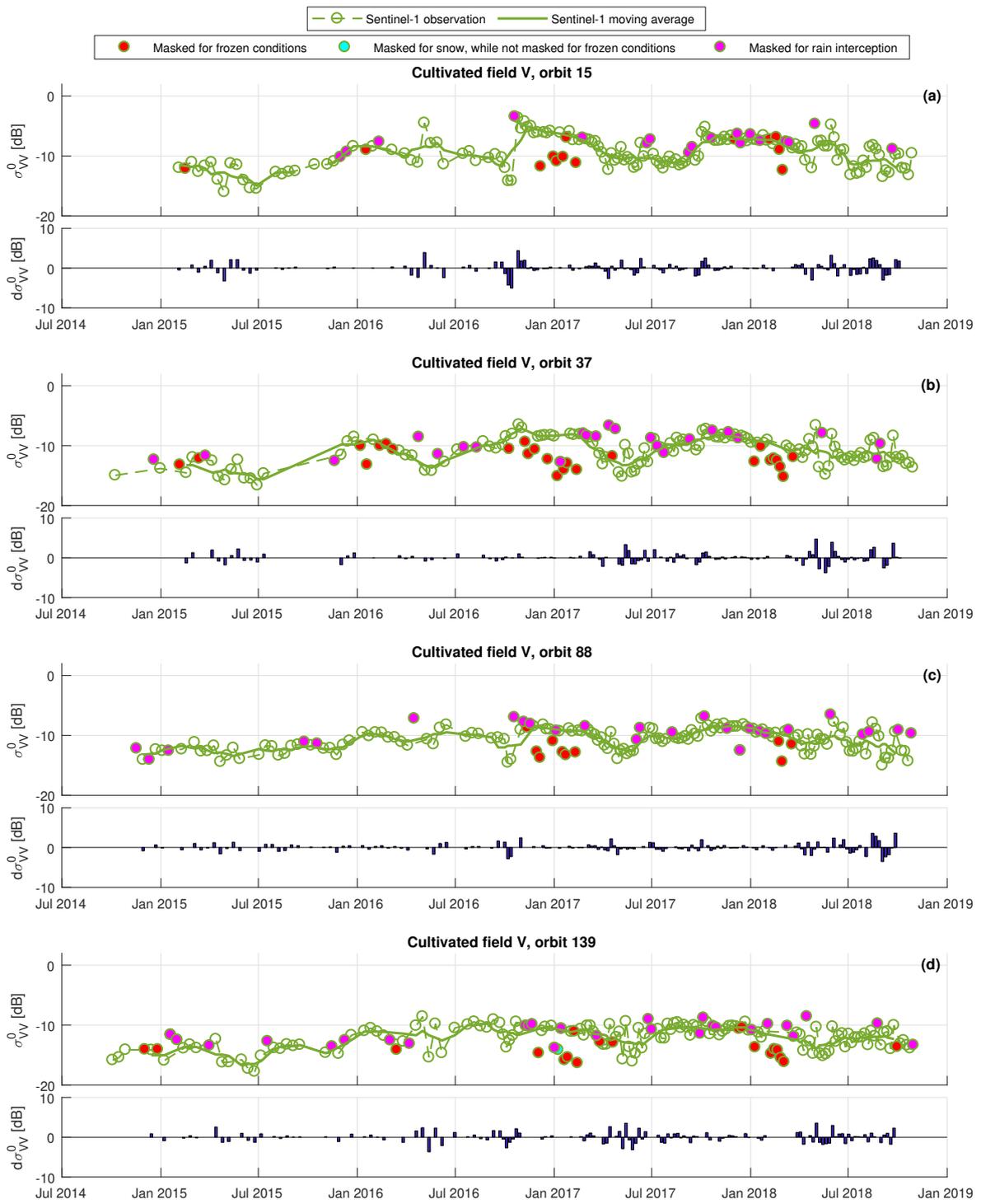
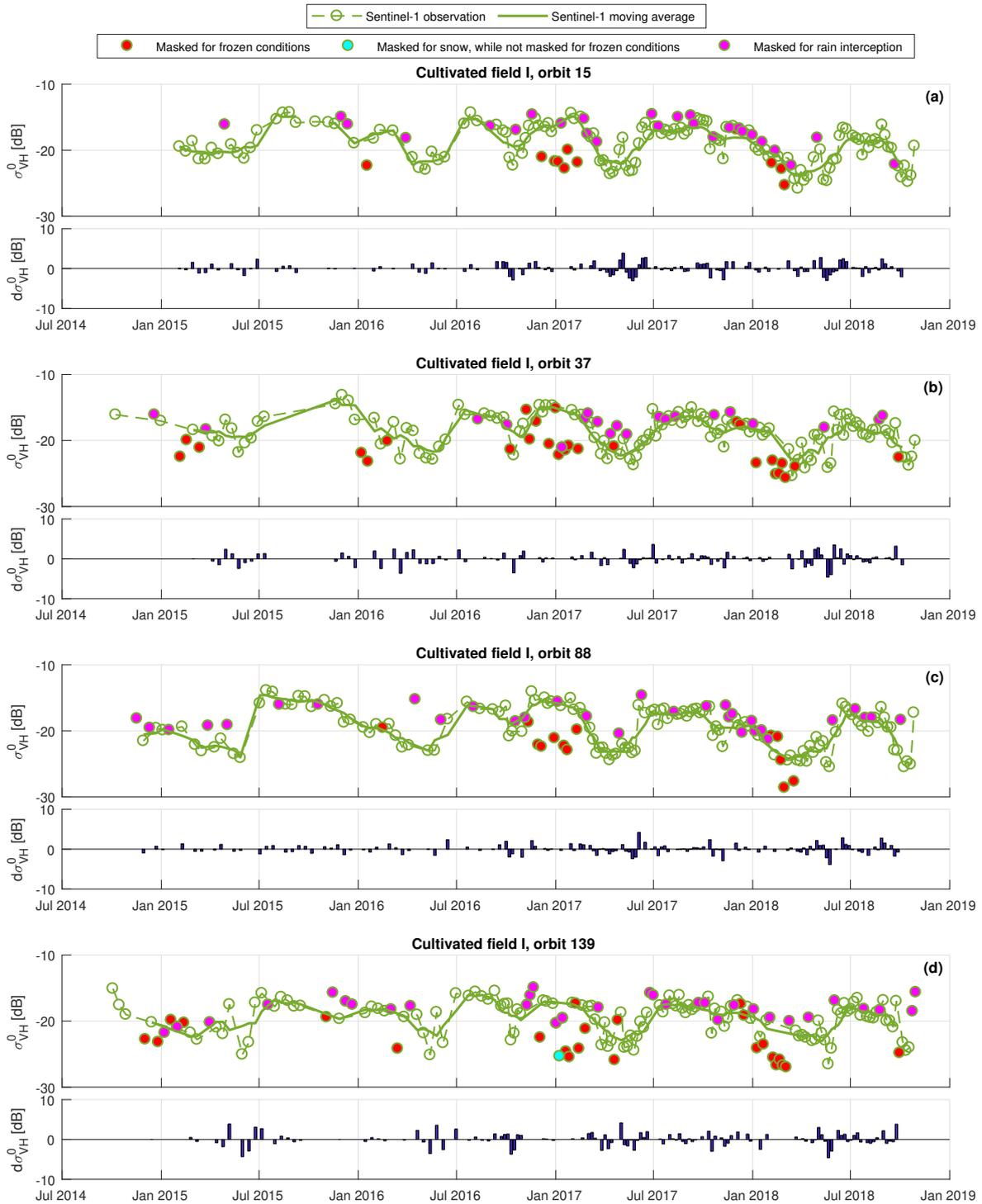


Figure S25. Same as Figure S21, for cultivated field V.

14 3.2. *VH Backscatter Observations*

**Figure S26.** Cultivated field I Sentinel-1 VH backscatter observations ( $\sigma_{VH}^0$ ) and anomalies with the moving average ( $d\sigma^0$ ) calculated with Equation 1 in the paper using a moving average window of 25 days. The Sentinel-1 observations that are masked for frozen conditions, snow or rain interception are not included in the calculation of the moving averages.

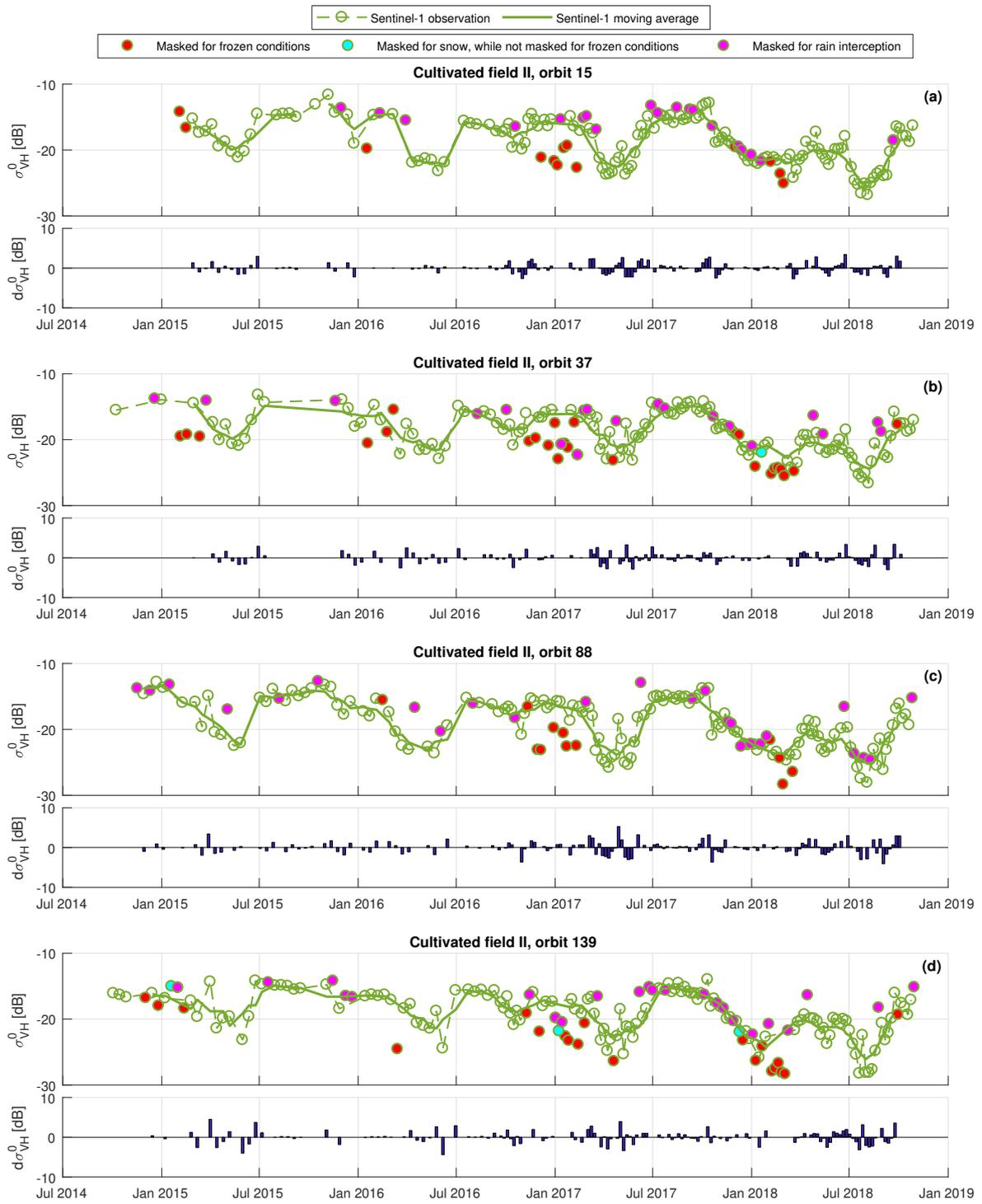
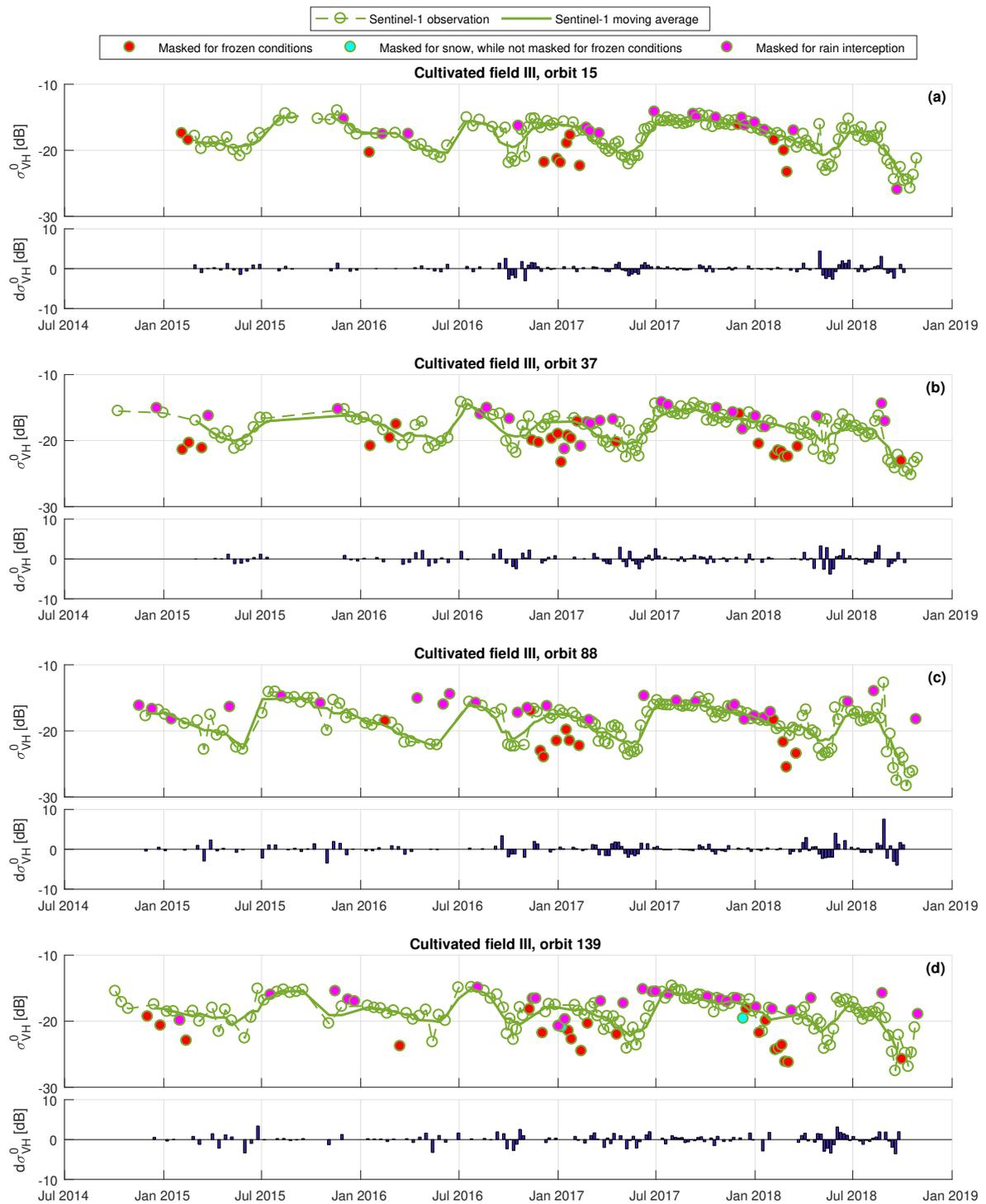


Figure S27. Same as Figure S26, for cultivated field II.



**Figure S28.** Same as Figure S26, for cultivated field III.

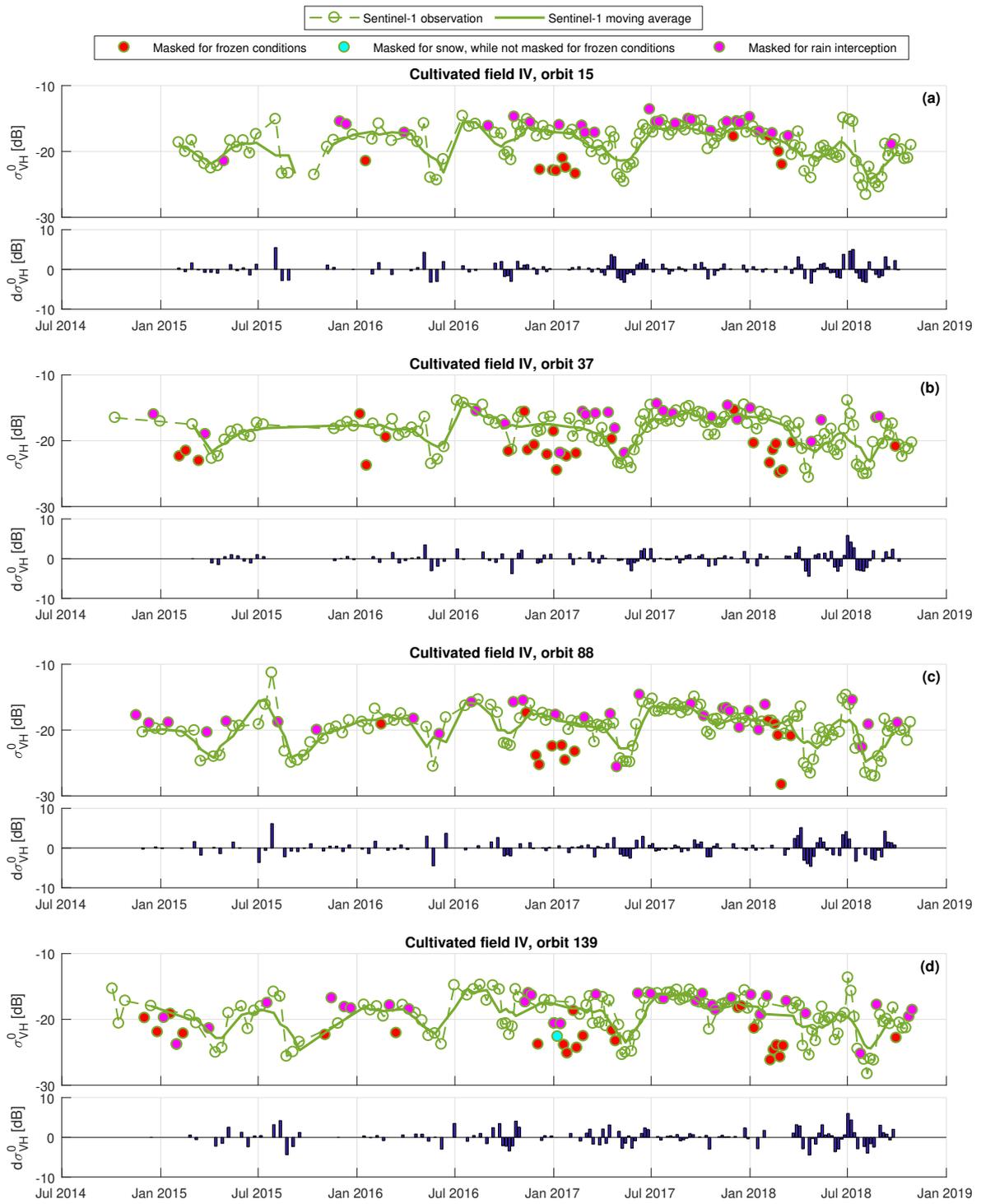


Figure S29. Same as Figure S26, for cultivated field IV.

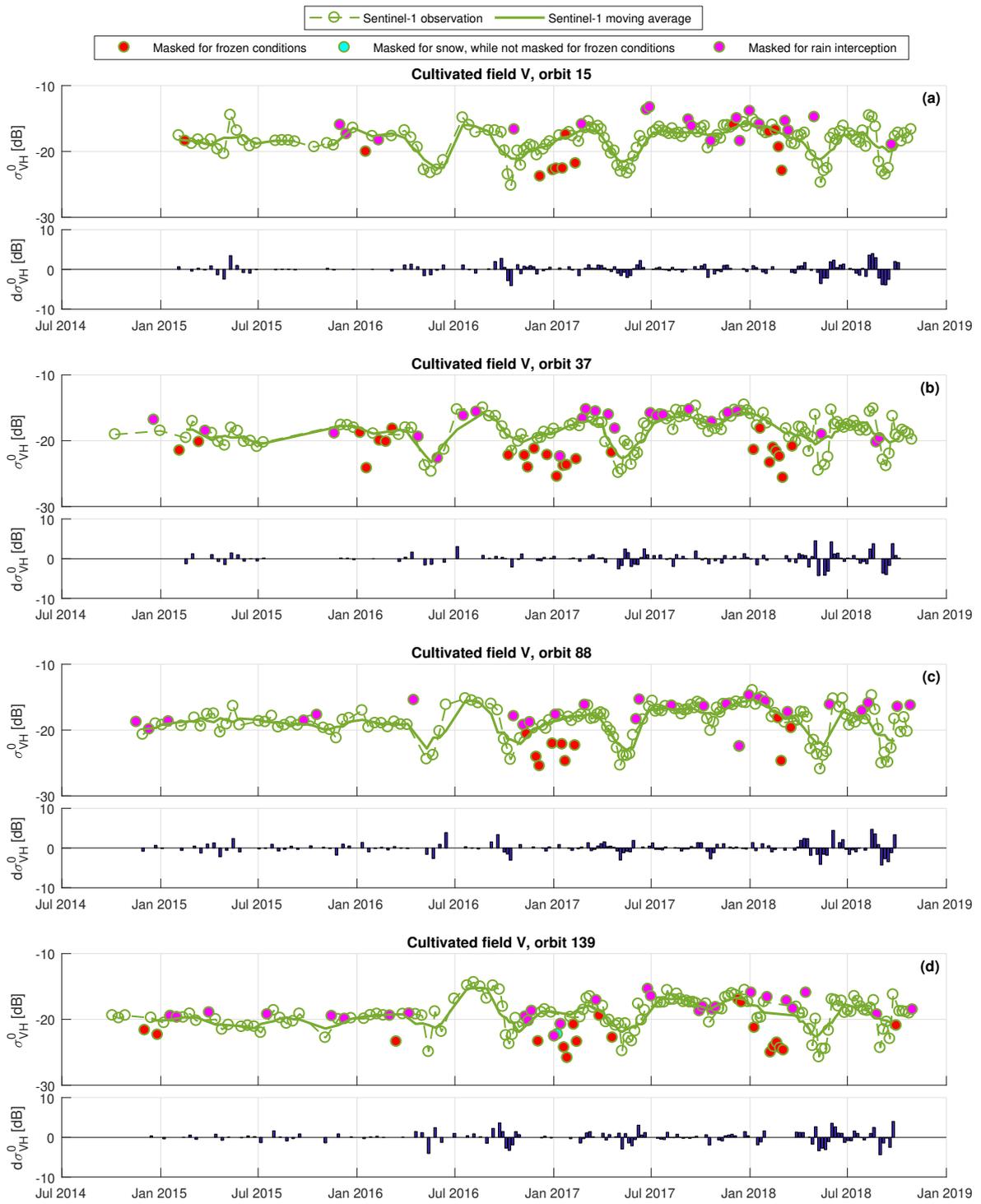


Figure S30. Same as Figure S26, for cultivated field V.