remote sensing

MDPI

Supplementary material for the paper:

Retrieval of multiple variables from hyperspectral data: a PRISMA-aligned systematic review of classical-physics based, machine learning and hybrid algorithms in vegetation and raw materials application domains

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1. Database search queries and applied filters

1.1 Web of Science (WOS) parameters

- Search fields: Topic (TS)
- Filtered applied by interface:
  - Publication years: 2015-2025
  - Language: English

1.1.1. Executed research strings

The following research strings have been used to identify studies related to the use of hyperspectral imagery for the retrieval of the selected products.

1. Vegetation - Canopy Water Content:
- TS=("hyperspectral data") AND TS=("canopy water content") AND TS=("algorithm*")

2. Vegetation - Chlorophyll Content:
- TS=("hyperspectral data") AND TS=("chlorophyll") AND TS=("algorithm*")

3. Raw Materials – Mineral mapping:
- TS=("hyperspectral data") AND TS=("mineral mapping") AND TS=("algorithm*")

4. Raw Materials – Methane mapping:
- TS=("hyperspectral data") AND TS=(methane) AND TS=(gas) AND TS=("algorithm*")

In addition to the previous research strings, a further TS has been included, with "AND" operator, to identify all studies that make use of the ML/AI/DL extension (applied to all domains):

- TS=("machine learning" OR "artificial intelligence" OR "deep learning")

1.2. Scopus parameters

- Search fields: TITLE-ABS-KEY
- Filtered applied by interface :
  - Publication years: 2015-2025
  - Language: English

1.1.2. Executed research strings

The following research strings have been used to identify studies related to the use of hyperspectral imagery for the retrieval of the selected products.

1. Vegetation - Canopy Water Content

- TITLE-ABS-KEY("hyperspectral data" AND "canopy water content" AND algorithm*)

2. Vegetation - Chlorophyll Content

- TITLE-ABS-KEY("hyperspectral data" AND chlorophyll AND algorithm*)

3. Raw Materials - Mineral Mapping

- TITLE-ABS-KEY("hyperspectral data" AND "mineral mapping" AND algorithm*)

4. Raw Materials – Methane mapping

- TITLE-ABS-KEY("hyperspectral data" AND methane AND gas AND algorithm*)

In addition to the previous research strings, a further TITLE-ABS-KEY has been included, with “AND” operator, to identify all studies that make use of the ML/AI/DL extension (ap-plied to all domains):

- AND ("machine learning" OR "artificial intelligence" OR "deep learning")

2. Data extraction template (column names)

Table S1. Data-extraction template, listing the column names extracted during the screening phase.

Source database	Extracted column names
Web of Science (WoS)	Publication Type; Authors; Author Full Names; Group Authors; Article Title; Source Title; Language; Document Type; Author Keywords; Keywords Plus; Abstract; Addresses; Affiliations; Research Areas; WoS Categories; Publication Year; Journal Abbreviation; Volume; Issue; Start Page; End Page; Article Number; DOI; DOI Link; Times Cited (WoS Core); Times Cited (All Databases); Open Access Designations; Highly Cited Status; Date of Export
Scopus	URL; DOI; Journal; Year; Article Title; Authors; ENTRYTYPE; ID