Supplementary Tables

for

Review

Challenges and Limitations of Remote Sensing Applications in Northern Peatlands: Present and Future Prospects

Supplementary Table S1. List of the applications and grouping themes in the systematic literature search for review (for Figure 4).

Grouped Theme	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other
Applications	- CO2 Gas Fluxes - Peatland Productivity - CO2 fluxes - Methane Emission Mapping - Carbon Fluxes - GHG Emission Mapping	- Fire Risk Reduction - Wildfire Dynamics - Wildfire Vulnerability and Monitoring	- Predict Nutrients - Hydrologic services - Hydrology and Vegetation Dynamics - WTD Mapping	- Change Detection - Peatland Monitoring - Peatland Mapping - Peatland Classification - Peatland Degradation - Condition Assessment - Classification and Mapping	Peatland Degradation	- Restoration Monitoring - Peatland Restoration Management Monitoring	- Vegetation Phenology - Vegetation Analysis and Modeling - Vegetation Classification - Peatland Productivity - Peatland Vegetation - Vegetation Dynamic	- Hyperspectral Validation - Measuring Surface Albedo

- Methane Fluxs	- Mapping Microtopography	- Vegetation Mapping
- Carbon Stocks Estimation	- Peatland Microtopography	- Respiration Modeling and Upscaling
- Peat Depth Estimation	- Change Assessment	

Supplementary Table S2. The total number and percentage of studies that used different remote sensing platforms (such as satellites, airborne, in-situ, or mixed sensors) in northern peatlands over the years 2017-2022.

Year	Satellite	Airborne	UAV	In-situ	Mixed	Total	%
2017	5	5	1	4	3	18	13.1%
2018	7	2	3	0	4	16	11.7%
2019	12	5	6	4	6	33	24.1%
2020	8	4	2	3	4	21	15.3%
2021	10	5	4	1	5	25	18.2%
2022	8	7	3	3	3	24	17.5%
Total	50	28	19	15	25	137	100%
%	36.5%	20.4%	13.9%	10.9%	18.2%	100%	-

Supplementary Table S3. The total number and percentage of studies that applied remote sensing-based applications in northern peatlands over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	2	1	5	5	0	1	4	0	18	13%
2018	2	1	3	7	0	1	2	0	16	12%
2019	3	0	1	13	1	7	6	2	33	24%
2020	1	1	2	9	1	3	3	1	21	15%
2021	7	0	4	9	1	1	3	0	25	18%
2022	4	4	2	7	0	2	5	0	24	18%
Total	19	7	17	50	3	15	23	3	137	100%
%	14%	5%	12%	36%	2%	11%	17%	2%	100%	-

Supplementary Table S4. The total number and percentage of studies that used satellite included in the SLR over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	1	0	0	3	0	0	1	0	5	10%
2018	1	1	1	3	0	1	0	0	7	14%
2019	3	0	1	3	1	3	1	0	12	24%
2020	0	1	2	5	0	0	0	0	8	16%
2021	1	0	1	6	1	0	1	0	10	20%
2022	1	1	2	1	0	1	2	0	8	16%
Total	7	3	7	21	2	5	5	0	50	100%
%	14%	6%	14%	42%	4%	10%	10%	0%	100%	-

Supplementary Table S5. The total number and percentage of studies that used airborne included in the SLR over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	0	1	2	1	0	0	1	0	5	18%
2018	1	0	0	1	0	0	0	0	2	7%
2019	0	0	0	2	0	1	1	1	5	18%
2020	1	0	0	2	0	0	0	1	4	14%
2021	1	0	2	1	0	0	1	0	5	18%
2022	1	3	0	3	0	0	0	0	7	25%
Total	4	4	4	10	0	1	3	2	28	100%
%	14%	14%	14%	36%	0%	4%	11%	7%	100%	-

Supplementary Table S6. The total number and percentage of studies that used UAV included in the SLR over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	0	0	1	0	0	0	0	0	1	5%
2018	0	0	0	2	0	0	1	0	3	16%
2019	0	0	0	3	0	3	0	0	6	32%
2020	0	0	0	0	0	2	0	0	2	11%
2021	1	0	1	1	0	1	0	0	4	21%
2022	1	0	0	1	0	1	0	0	3	16%
Total	2	0	2	7	0	7	1	0	19	100%
%	11%	0%	11%	37%	0%	37%	5%	0%	100%	-

Supplementary Table S7. The total number and percentage of studies that used in-situ included in the SLR over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	1	0	1	0	0	0	2	0	4	27%
2018	0	0	0	0	0	0	0	0	0	0%
2019	0	0	0	1	0	0	3	0	4	27%
2020	0	0	0	1	0	0	2	0	3	20%
2021	1	0	0	0	0	0	0	0	1	7%
2022	1	0	0	0	0	0	2	0	3	20%
Total	3	0	1	2	0	0	9	0	15	100%
%	20%	0%	7%	13%	0%	0%	60%	0%	100%	-

Supplementary Table S8. The total number and percentage of studies that used mixed or multiple platforms included in the SLR over the years 2017-2022.

Year	C Fluxes and Storage	Fire Dynamics	Hydrology	Mapping and Monitoring	Peatland Degradation	Restoration and Management Monitoring	Vegetation	Other	Total	%
2017	0	0	1	1	0	1	0	0	3	12%
2018	0	0	2	1	0	0	1	0	4	16%
2019	0	0	0	4	0	0	1	1	6	24%
2020	0	0	0	1	1	1	1	0	4	16%
2021	3	0	0	1	0	0	1	0	5	20%
2022	0	0	0	2	0	0	1	0	3	12%
Total	3	0	3	10	1	2	5	1	25	100%
%	12%	0%	12%	40%	4%	8%	20%	4%	100%	-