Open Access Earth System Science Data

Supplement of

The GIEMS-MethaneCentric database: a dynamic and comprehensive global product of methane-emitting aquatic areas

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Class number	Class
0	Dryland (non-wetland)
1	Freshwater lake
2	Saline lake
3	Reservoir
4	Large river
5	Large estuarine river
6	Other permanent waterbody
7	Small streams
8	Lacustrine, forested
9	Lacustrine, non-forested
10	Riverine, regularly flooded, forested
11	Riverine, regularly flooded, non-forested
12	Riverine, seasonally flooded, forested
13	Riverine, seasonally flooded, non-forested
14	Riverine, seasonally saturated, forested
15	Riverine, seasonally saturated, non-forested
16	Palustrine, regularly flooded, forested
17	Palustrine, regularly flooded, non-forested
18	Palustrine, seasonally saturated, forested
19	Palustrine, seasonally saturated, non-forested
20	Ephemeral, forested
21	Ephemeral, non-forested
22	Arctic or boreal peatland, forested
23	Arctic or boreal peatland, non-forested
24	Temperate peatland, forested
25	Temperate peatland, non-forested
26	Tropical peatland, forested
27	Tropical peatland, non-forested
28	Mangrove
29	Saltmarsh
30	Delta
31	Other coastal wetland
32	Salt pan, saline or brackish wetland
33	Paddy rice

Table S1. GLWDv2 classes. For more details about GLWDv2, see (Lehner et al., 2024).

Class number	Class
0	no_data
10	cropland_rainfed
11	cropland_rainfed_herbaceous_cover
12	cropland_rainfed_tree_or_shrub_cover
20	cropland_irrigated
30	mosaic_cropland
40	mosaic_natural_vegetation
50	tree_broadleaved_evergreen_closed_to_open
60	tree_broadleaved_deciduous_closed_to_open
61	tree_broadleaved_deciduous_closed
62	tree_broadleaved_deciduous_open
70	tree_needleleaved_evergreen_closed_to_open
71	tree_needleleaved_evergreen_closed
72	tree_needleleaved_evergreen_open
80	tree_needleleaved_deciduous_closed_to_open
81	tree_needleleaved_deciduous_closed
82	tree_needleleaved_deciduous_open
90	tree_mixed
100	mosaic_tree_and_shrub
110	mosaic_herbaceous
120	shrubland
121	shrubland_evergreen
122	shrubland_deciduous
130	grassland
140	lichens_and_mosses
150	sparse_vegetation
151	sparse_tree
152	sparse_shrub
153	sparse_herbaceous
160	tree_cover_flooded_fresh_or_brakish_water
170	tree_cover_flooded_saline_water
180	shrub_or_herbaceous_cover_flooded
190	urban
200	bare_areas
201	bare_areas_consolidated
202	bare_areas_unconsolidated
210	water
220	snow_and_ice

Table S2. ESA CCI Land Cover Classes. For more details see (ESA, 2017).

	India	China	Indonesia	Bangladesh	Thailand	Vietnam
FAO	~15%	~2-3%	~5%	~9%	~1-2%	~5%
MIRCA rainfed where slope >3%	10%	5%	32%	2%	11%	19%

Table S3. Proportion of upland rice area to total rice area estimated by FAO (FAO, 2002) or estimated by categorizing MIRCA rainfed rice areas with the highest slope topography (slope > 3%). The 3% slope threshold was chosen so that the derived global area of upland rice paddies matched the FAO global estimate of upland rice paddies. Topography data come from Copernicus DEM (Fahrland, E., 2022) that have been averaged at 0.25° resolution.
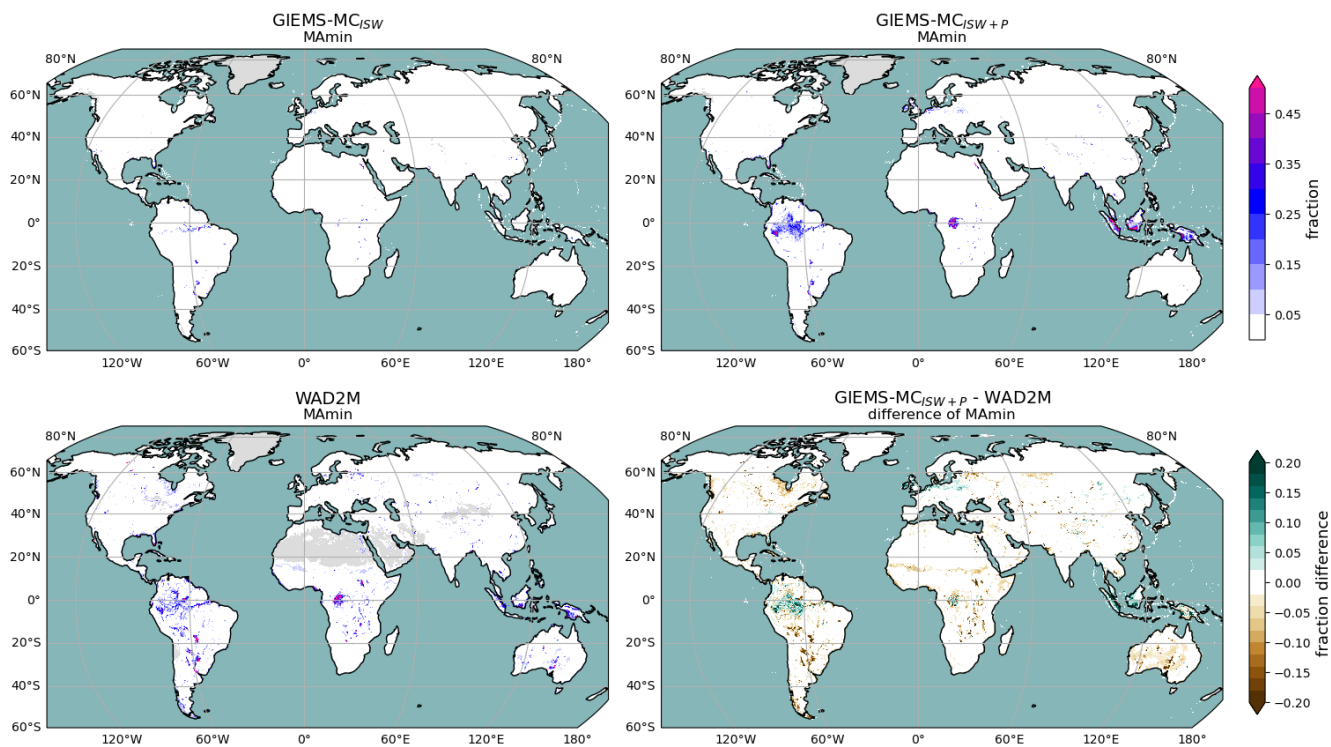
Figure S1. Global distribution of the MAmin of GIEMS-MC$_{ISW}$, GIEMS-MC$_{ISW+P}$, and WAD2M (Zhang et al., 2021), as well as the difference of MAmin from GIEMS-MC$_{ISW+P}$ and WAD2M.

References

ESA: Land Cover CCI. Product User Guide Version 2.0, Tech. rep., ESA, 2017.

Fahrland, E.: ERA5-Land monthly averaged data from 1950 to present, 2022.

FAO: FAO Rice Information, Volume 3, FAO, 2002.

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10   Zhang, Z., Fluet-Chouinard, E., Jensen, K., McDonald, K., Hugelius, G., Gumbricht, T., Carroll, M., Prigent, C., Bartsch, A., and Poulter, B.: Development of the Global Dataset of Wetland Area and Dynamics for Methane Modeling (WAD2M), Earth System Science Data, 13, 2001–2023, https://doi.org/10.5194/essd-13-2001-2021, 2021.