Few proposals as an outcome from the AI CGMS-53 PLENARY discussion

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Data Curation standards

To facilitate the use of AI/ML by CGMS contributing agencies and meteorological data users, CGMS shall identify standards for using and converting meteorological EO data into a suitable form for Machine Learning applications. The key elements to be addressed are:

- Data standards and formats, such as for example Zarr usage best practices

- Most relevant data transformation/representation per measurement type, i.e., remapping, standard vertical grids, etc

- Adoption of standard metadata per measurement type, preferably using CF metadata conventions, i.e., source of the information, AI fused or original data, error characterization of original and fused data.

Proposed activity: CGMS Secretariat to survey CGMS contributing agencies; WG ii and WG iv proposing initial standards to be presented at CGMS-54

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A CGMS catalogue of AI/ML applications

- The primary goal is to monitor advancements at the Agency level and among the global AI/ML working groups.

- The catalogue needs to include metadata related to application, data sources, model type, and repository links.

- Encourage community involvement by disseminating AI/ML systems via web repositories (e.g., GitHub).

- A first step is to collect metadata information through a survey - CGMS Secretariat to survey CGMS contributing agencies – WG ii to produce a first catalogue

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Exploring Space Weather AI readiness

- There is a need to further explore the problems related to AI/ML space weather readiness.

- SWCG and WG-II co-organizing 2-3 intersessional on-line seminars to explore:

  - Range of applicability: Solar Flare & Coronal Mass Ejection (CME) Prediction; Radiation Storm Forecasting; Geomagnetic Storm Forecasting; Satellite Anomaly Attribution.

  - Open Challenges & Frontiers: Explainability; Data Scarcity (i.e. rare extreme events limit training); Real-Time Deployment; Real-Time Data Gap Filling

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A framework to explore how AI propagates errors in the final products - IPWG

The impact of satellite observation errors on global precipitation products requires understanding how microwave (MW) and infrared (IR) data with varying accuracies propagate uncertainties into final precipitation estimates. Standards should be identified.

First, consider different scenarios of MW/IR satellite inputs considering high quality and mixed quality scenarios. Second, how these errors compound when merged into products using AI/ML. Third, designing controlled experiments to isolate error impacts.

IPWG could be the right framework where to develop such experiment setting. Although it needs support from CGMS agencies.

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