Data access to the MSG Cloud Physical Properties (MSG-CPP) products

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At KNMI the Cloud Physical Properties (CPP) algorithm is being developed to derive cloud, precipitation and radiation products from MSG satellite images. The CPP algorithm is mostly developed inside the Climate SAF (CM-SAF), but is further being developed in research projects like SYNTHESIS, MSGSIM and SICCS. The CM-SAF operationally provides Level 3 (daily and monthly) cloud products (cloud water path, cloud optical thickness and cloud thermodynamic phase). KNMI is currently the only organization that provides these cloud products at Level 2 (instantaneous) on an operational basis. Moreover, KNMI provides a number of newly developed precipitation and radiation products at Level 2 operationally.

Many tools and data formats exist for these kinds of satellite data. To disseminate this wealth of information to the user communities is still very difficult: It is complicated to easily share data cross-domain among scientists without performing some cumbersome conversions. To enable user friendly product access, Open Geospatial Consortium (OGC) services like Web Mapping Services (WMS) and Web Coverage Services (WCS) will be implemented to make the entire dataset of MSG-CPP available via well defined open standards for geo spatial data exchange. The OGC services support standard operations like subsetting in time and space, reprojection and the transfer of data in standard data formats.

The data will be stored in the NetCDF4 format, which uses HDF5 as the physical file storage. The NetCDF4 file format provides the best of the NetCDF3 and HDF5 worlds: NetCDF with its large community and simple but powerful api, HDF5 for its specific data structures and compression. Metadata is stored inside the files to comply with the Climate and Forecast (NetCDF-CF) convention and the INSPIRE guidelines. Experience of the ADAGUC project will be applied in this MSG-CPP project (http://adaguc.knmi.nl).

The end results are:
- Open source initiatives like GDAL, OGR, NetCDF, HDF5, Proj4 and UMN MapServer have been
used to build a geo spatial infrastructure to accommodate the MSG-CPP products.
- Directly usable products, which can be obtained via the OGC WMS and WCS services: users can use the products in real time with their OGC compliant application or download the data directly using the services.
- An internet portal with quick looks of the MSG-CPP products that can be viewed in real-time (small layer on top of the WMS services).
- The MSG CPP products will be available in NetCDF-CF and are INSPIRE compliant.
These data access services will be implemented for the complete line of MSG-CPP products resulting in a multi-Terabyte online service.

The presentation will focus on the applied (meta) data standards, OGC services and used technology.