

On-demand-on-the-fly production of DHP S-111 & S-104 data using a RESTful OGC compliant pygeoapi process plugin

Mercier Gilles¹, Carré Maxime¹, Christians Andrea¹, MacAulay Phillip¹, Davidson Fraser^{1,2}

¹ Canadian Hydrographic Service (CHS), Canada

² Environment and Climate Change Canada (ECCC), Canada
gilles.mercier@dfo-mpo.gc.ca

Tiled S-111 and S-104 Dynamic Hydrographic Products (DHP) are now routinely produced through operational and experimental automated runs respectively for Canadian coastal waters using ECCC oceanographic-hydrodynamic models and planned DFO ports models forecast results. The CHS now seeks to directly provide clients with on-demand-on-the-fly real-time water levels and (H)ADCP derived currents data using the official S-104 & S-111 data coding format8 standards of the International Hydrographic Organization (IHO).

This new on-demand-on-the-fly real-time functionality will be implemented using a RESTful web service implementation of the Open Geospatial Consortium (OGC) application programming interface (pygeoapi). This CHS pygeoapi process plugin is a web service API derived from a generic version developed by the ECCC-GeoMet development team. It will allow external ECDIS and PPU's client GUIs to retrieve real-time tide gauge and (H)ADCP data from the CHS's new cloud-based Integrated Water Level System (IWLS) using the official S-104 & S-111 data coding format8 (Dcf8) standards of the IHO. The CHS-DHP team developers are working in close collaboration with the ECCC GeoMet team to develop the code. It will be the first non-ECCC GeoMet managed pygeoapi process plugin developed and will likely represent the proof-of-concept depicting real-time data retrieval capabilities of such an API for other agencies of the Government of Canada.

The CHS-DHP team plan to expand the capabilities of the new pygeoapi process plugin to allow external ECDIS & PPU's clients to directly retrieve 3D vertical currents profiles on a planned linear ship track ("way-points"). These will be called, **Along (ship) Track Forecasted Currents Profiles ("ATFCP")** and will be extracted from ECCC and DFO oceanographic models results. Finally, the team will test the implementation of direct retrieval of tiled S-111 & S-104 2D data files for small delimited areas ("bounding-boxes") using the new pygeoapi process plugin.