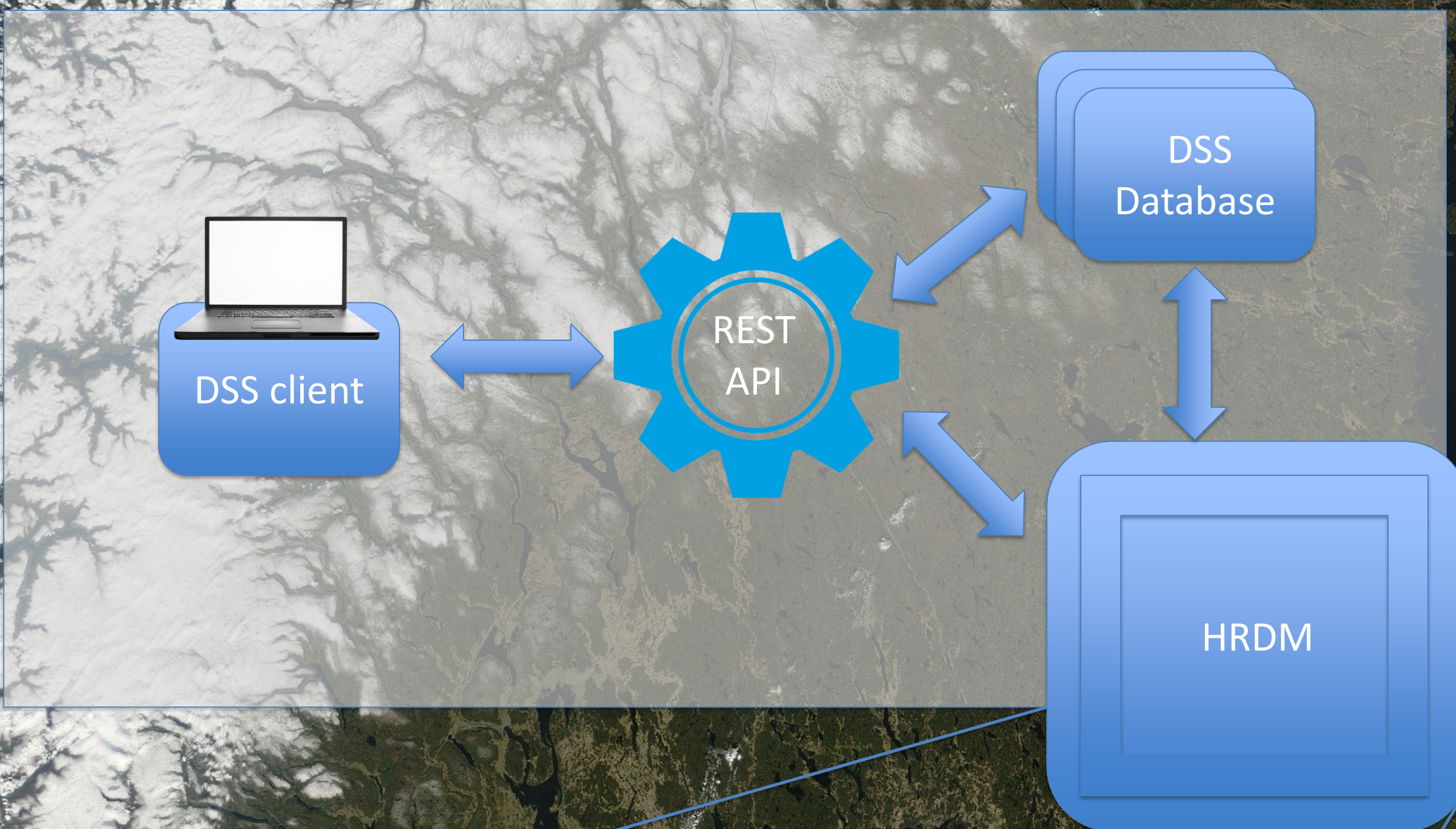
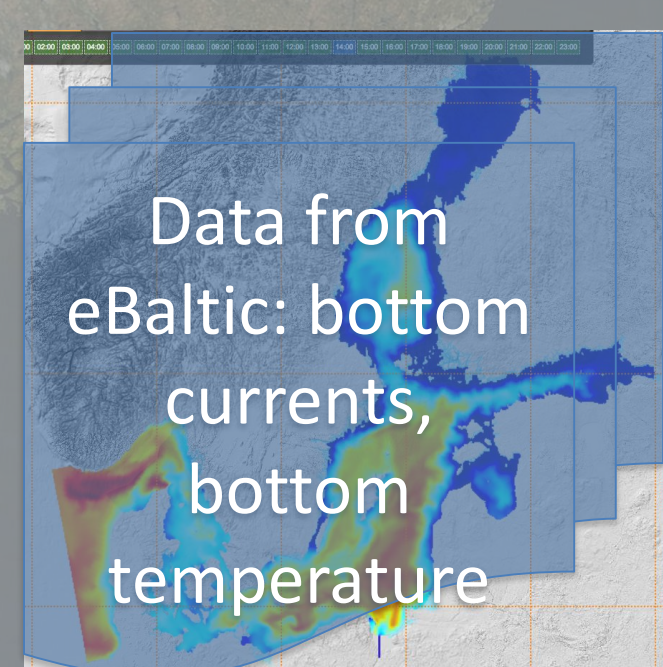


After the Second World War, during the Potsdam Conference a decision about demilitarization of Germany was made, and as a consequence, munition including chemical warfare agents (CWA) was dumped into the basins of the Baltic Sea. This type of weapon was stored in metal barrels that were under strong influence of electrochemical oxidation (corrosion). Several tens years later, scientists were wondering what consequences for marine ecosystem could have a leakage from this weapon bring. Although over 70 years passed since the Second World War, the influence of potential leakage of the CWA is not known yet. Thus, the main goal of this work is to estimate dangerous area caused by potential leakage using the HRDM dispersion model. The HRDM model is developed in Institute of Oceanology Polish Academy of Sciences.



REST (Representational State Transfer) API (Application Programming Interface) is high level structure of network service that grants access to data (in a wide sense) via internet excluding web browser. This solution is implemented in DAIMON DSS system.

One of the component of DSS items is the results of the potential dispersion of contamination using HRDM. This model is two dimensional. Initial data such as sea bottom currents and temperature are taken from operational IOPAS model – eBaltic (<https://ebaltic.plgrid.pl/>). The HRDM model takes into account the main physical processes that have influence dispersion of contamination - advection, diffusion and half-life ($t_{1/2}$) of substance. There two cases – with (upper) and without half-life (lower). The examples show continous leakage. There is also assumption , that initial concentratiojn of contamination is equal to one – it is much more flexible – multiplying the result by initial conentration provides real contamination.



Every hour
outputs in
netCDF format

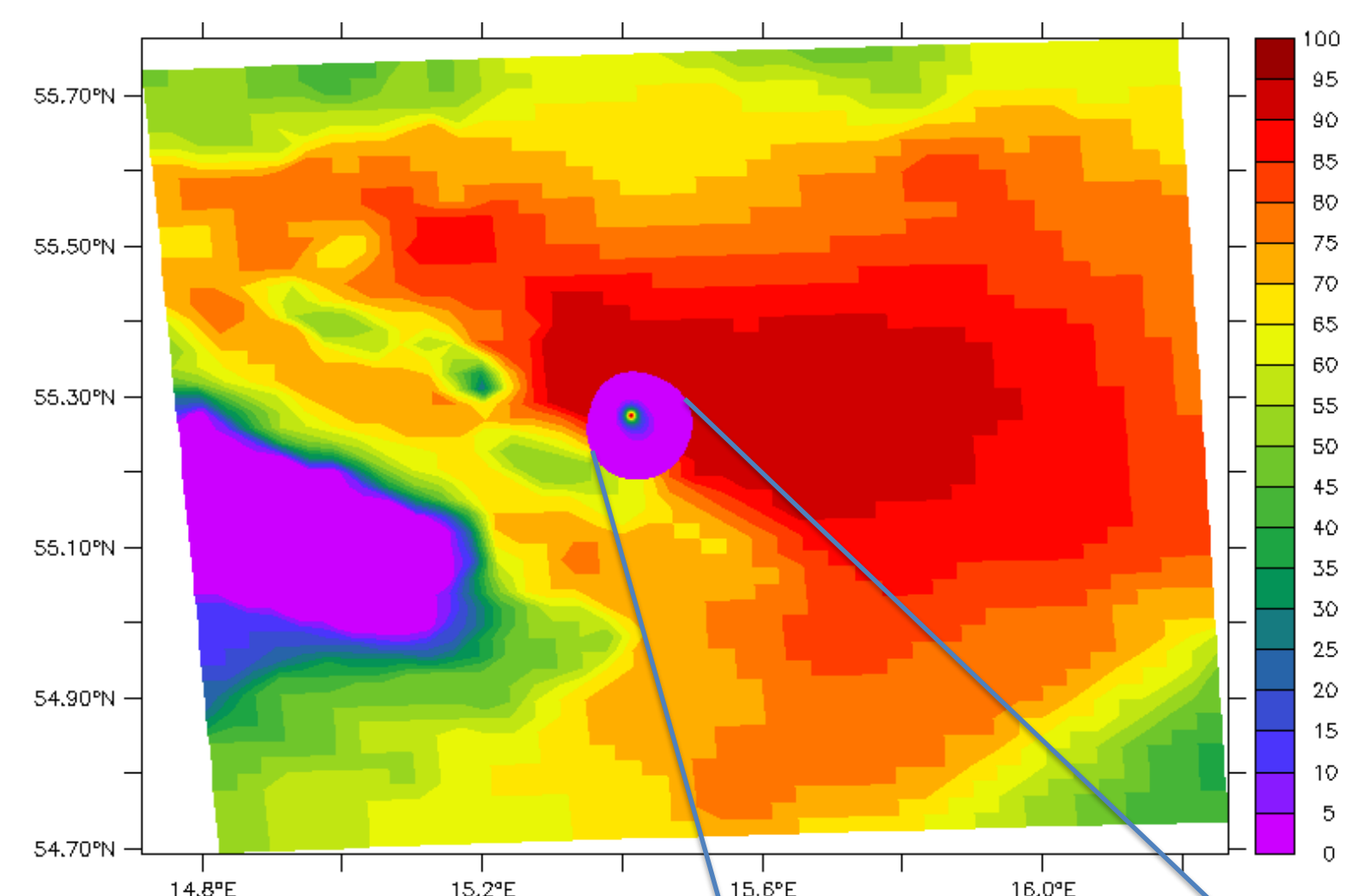
Data
interpolation on
high resolution
grid

Scattering of
contamination based on
advection and diffusion
processes, also half-life is
added separately



source: <http://ungc.org.pl/aktualnosci/baltyk-morzem-martwym-bron-chemiczna-wciaz-dnie/>

Bornholm Deep area bathymetry with
estimated contamination



Examples of dispersion using continuous leakage (upper pictures) and no “half-life” Current arrows has been added.

After 1 day

After 2 days

After 3 days

After 4 days

After 5 days

Examples of dispersion using continuous leakage with “half-life” effect and current arrows