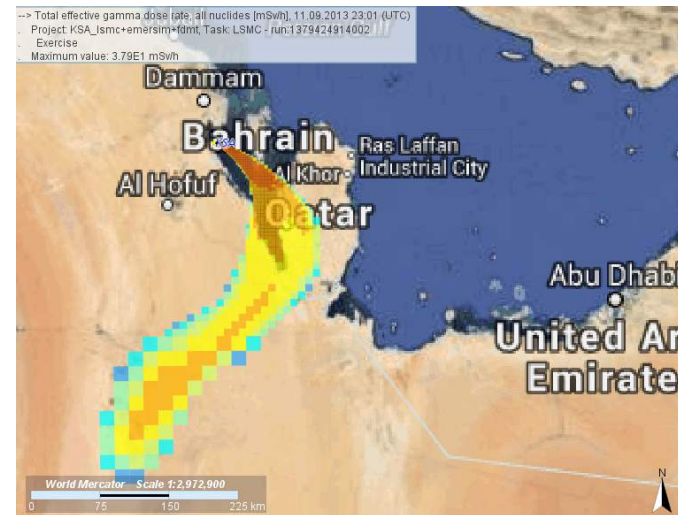
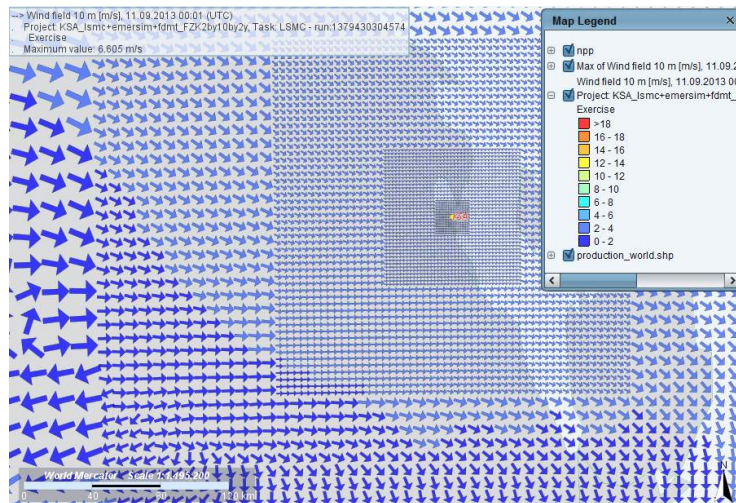


Worldwide applicability of JRodos

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For doing such a calculation one must know:

- Which nuclear facility caused the release event, and some basic facts about the site (e.g. co-ordinates)
- What are the geographical characteristics around the release location
- What are the atmospheric conditions determining the dispersion and deposition of the released radioactive material

Nuclear facilities in the world

- Collected relevant information on the world operational nuclear reactors with thermal power over 1MW, both industrial and scientific
- For each block
 - Geo coordinates
 - Inventory
 - Power in MW, etc
- Used IAEA online data sets (The Database on Nuclear Power Reactors, Research Reactor Database), Wikimapia, Google Maps

Worldwide geographical characteristics



- Calculations require certain geographical data
 - Elevation
 - Land use
 - Population density
 - Soil type
- 1km*1km pixel data files are created for the world elevation, land use and soil type
 - GLOBE NOAA elevation; GlobCover 2009; USGS Global Soils Regions 60 arc-sec
- 10km*10km pixel population density estimate
 - Global population density estimates, 2015 (FGGD)

What moves the cloud: wind field, temperature, precipitation

- Global weather forecast – free data from NOMADS USA service
 - GRIB1 format (1 degree pixel) or GRIB2 format (0.5 degree pixel)
 - 7 days forecast
- Potentially, data from the European Centre for Medium-Range Weather Forecasts (ECMWF) can be used
- The biggest drawback – non-free for most organizations

What moves the cloud (continuation)

- JRodos can use these global data in the calculations:
 - Define where the files are stored and the filename template
 - Specify where in the selected GRIB container the wind, temperature and precipitation are to be found
- Global weather forecast data is only big pixels (120km GRIB1 and 50km GRIB2) = very coarse
- If more detailed calculations are needed – local weather forecast is required
- If data from national weather provider are not available, Weather Research Forecast model (WRF) can be used - then you become a surrogate weather forecast provider!

Thank you for your attention

Questions?