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# *Dynamical downscaling of the Copernicus atmospheric re-analysis data*

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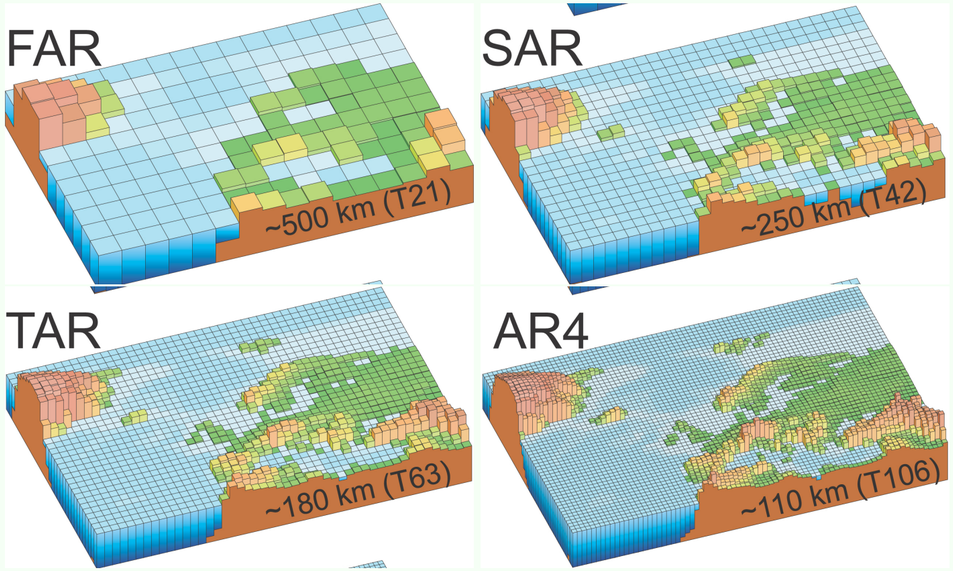
# *Dynamical downscaling*

- ***The idea behind dynamical downscaling is relatively simple***
  - ***Take data from a (relatively) coarse resolution model and use it to provide initial and boundary data to a local area atmospheric model that is run at a higher resolution***
  - ***As resolution is increased, processes governed by the interaction of the large-scale flow and topography become better resolved by the models***




Depiction of horizontal grid resolution of several global models, used for the IPCC climate evaluation reports over the years

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# *Atmospheric re-analysis data-series*

- ***Dates back more than twenty years***
- ***Started out with ERA40 (or even ERA15 ...)***
  - ***Using the MM5 atmospheric model for downscaling [8km res.]***
- ***Moving on to the ERA-Interim***
  - ***Using the WRF atmospheric model, two separate data series created (RÁV [3km res.] and RÁV2 [2km res.])***
- ***And finally ERA5/ERA5-Land***
  - ***Again using WRF, creating the IceBox data series [2km res.]***
  - ***IceBox is being extended semi-routinely. Current series ranges from 1 September 1990 to 1 April 2024***
  - ***Work is under way to extend the IceBox series to 1 October 2024***

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# Data availability

- RÁV and RÁV2 data are available af netCDF files
  - http://rav.betravedur.is/LOKS_Data/
  - http://rav.betravedur.is/RAV2/
- The RÁV2 data can also be viewed for chosen stations on
  - https://urdur.belgingur.is
- The IceBox data can be accessed (for academic use) via API
  - curl --dump-header /dev/stderr -H 'WOD-Auth: LOGIN:KEY' https://wod.belgingur.is/api/v2/data/archive/icebox/latlon/64.1578,-21.8648/vars/air_temperature_at_2m_agl,wind_speed_at_10m_agl/dates/2020 -10-01,2020-10-02.json
  - This API interface can also be used to access CARRA data for Iceland

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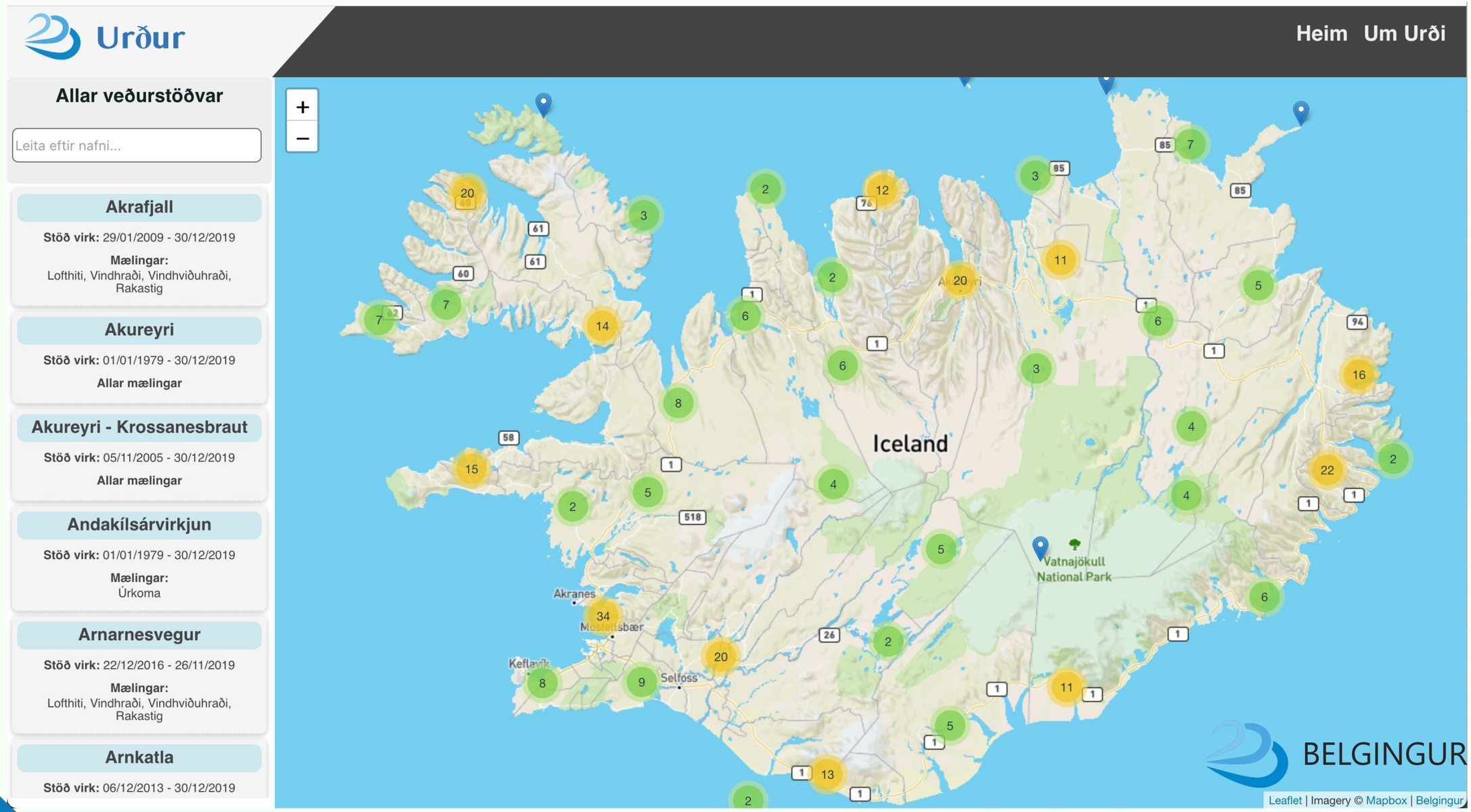
# https://urdur.belgingur.is



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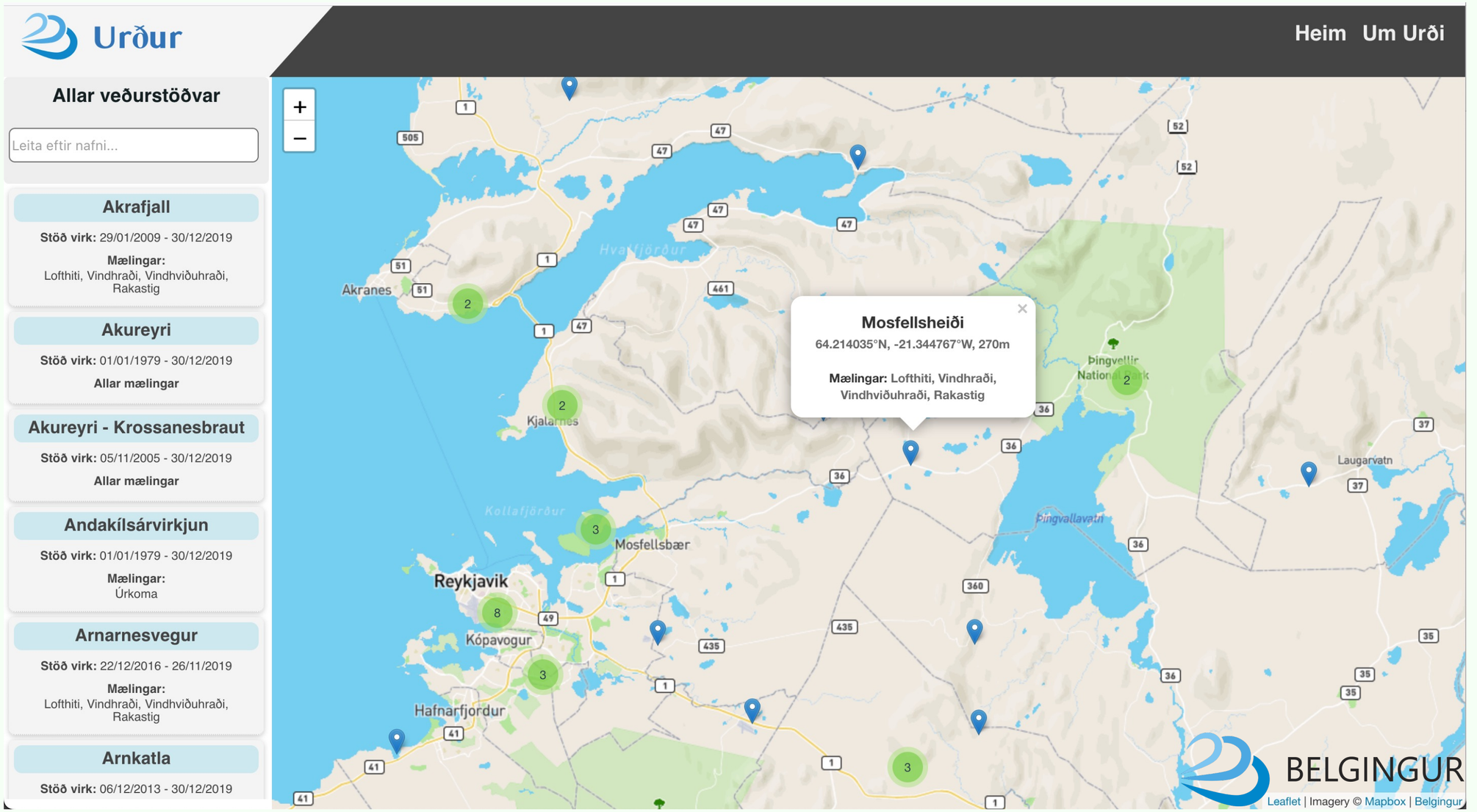

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## Mosfellsheiði vi.vegagerdin.31591

Stöð virk: 08/02/2012 - 30/12/2019

Mælingar: Lofthiti, Vindhraði, Vindhviðuhraði, Rakastig

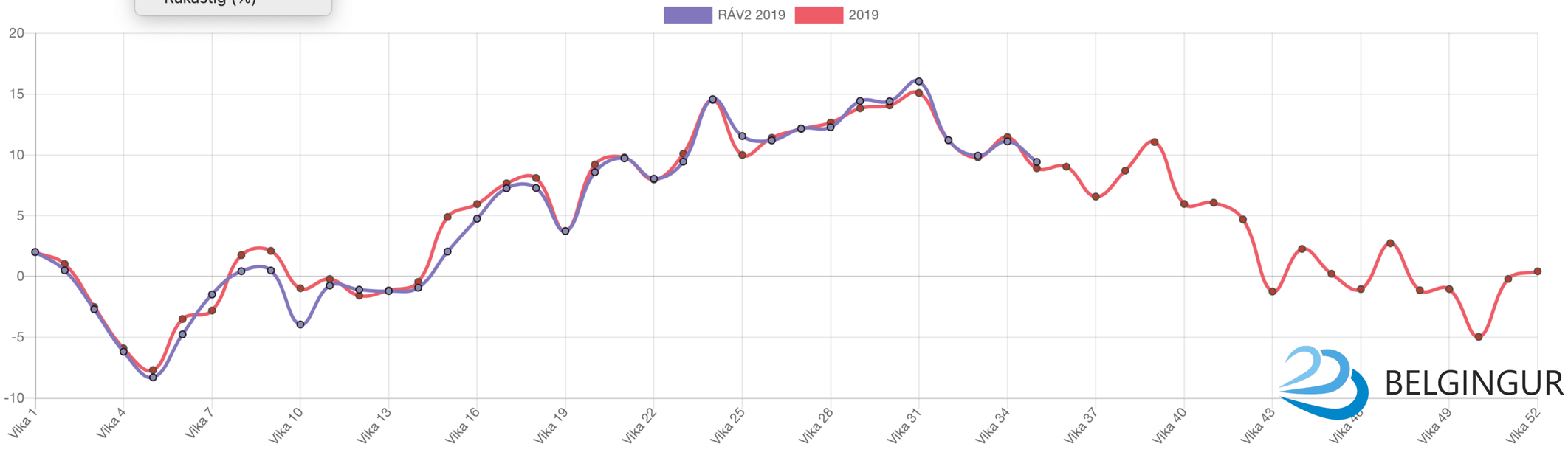
Graf | Tafla | Allar mælingar

### Samanburður á árabilum

Meðaltal af: Viku

Veldu mælingu: Lofthiti (°C) | Vindhraði (m/s) | Vindhviðuhraði (m/s) | Rakastig (%)

Veldu ár: RÁV2

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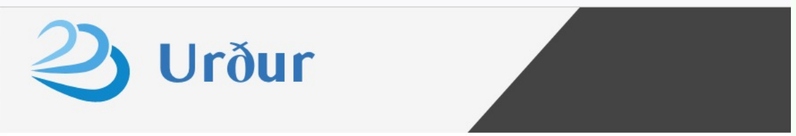


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### Allar mælingar og reiknuð meðaltöl

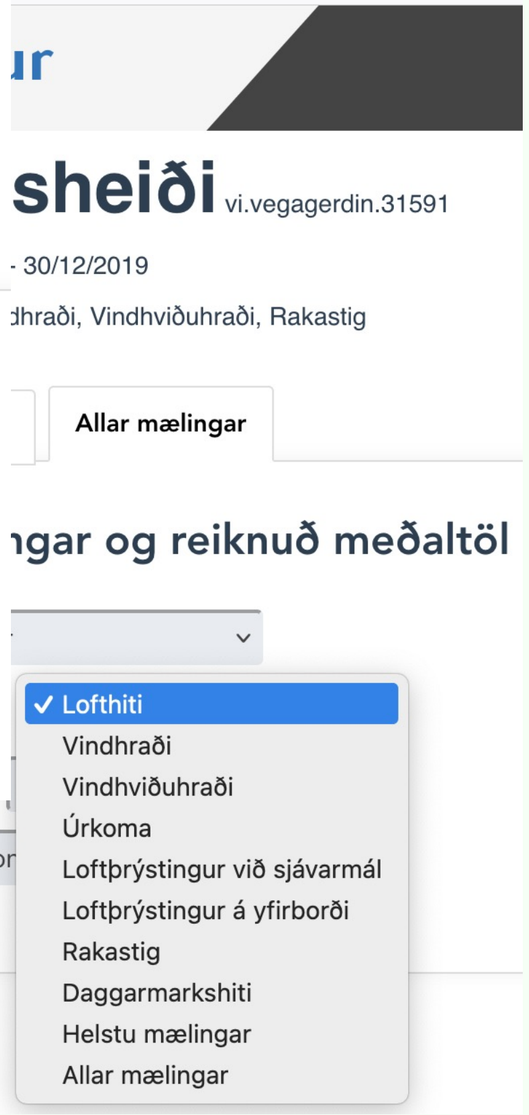
Gögn: Mælingar
- ✓ Mælingar
- RÁV2 Vikumeðaltal
- RÁV2 Mánaðarmeðaltal
- Mælingar Vikumeðaltal
- Mælingar Mánaðarmeðaltal

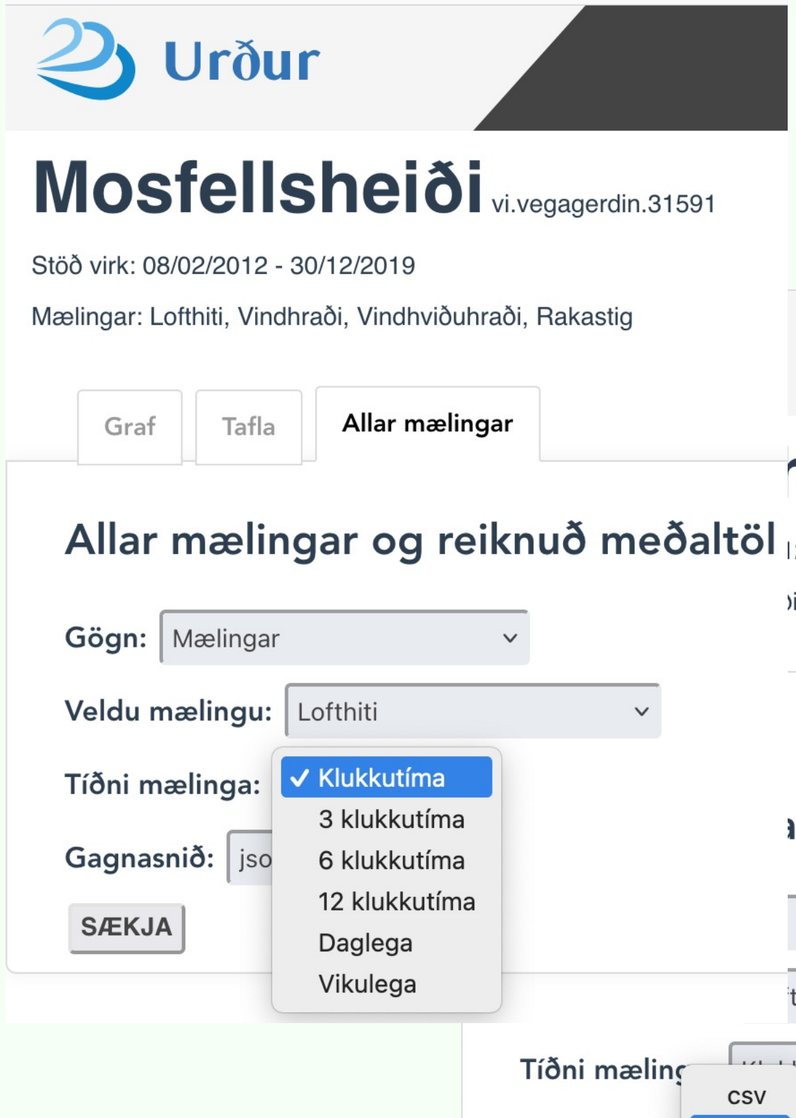
Veldu r…

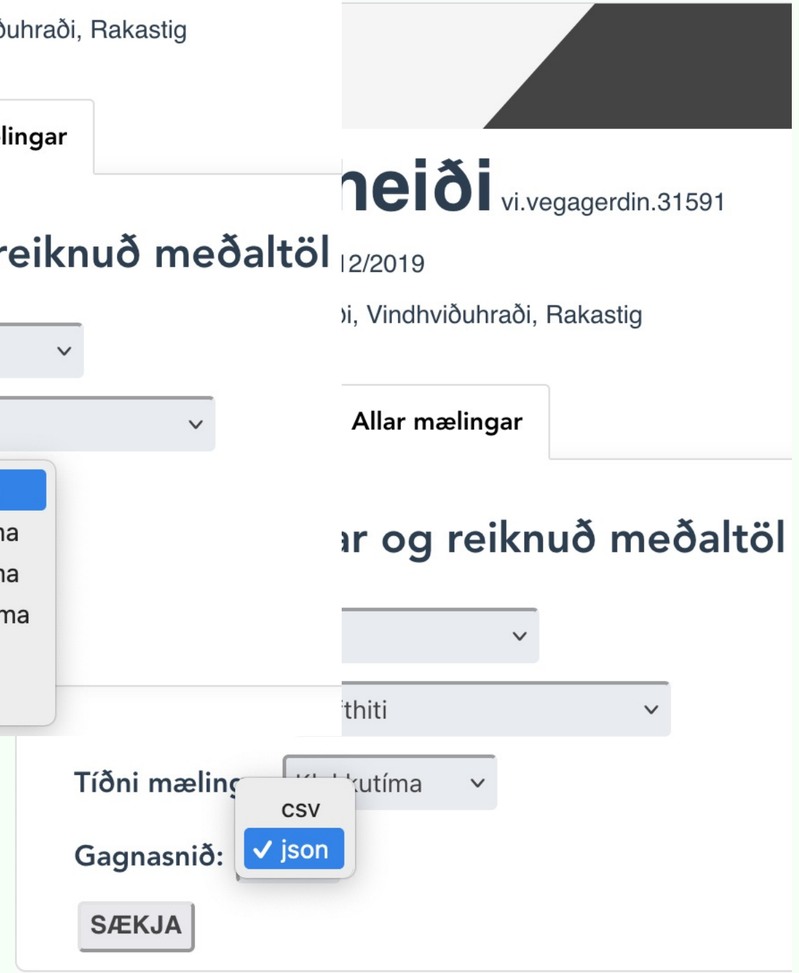
Tíðni m…

Gagnasnið: json

SÆKJA



# *Summary*

- ***We have used re-analysis (and operational analysis for that matter) from the ECMWF/Copernicus for over two decades as input to regional atmospheric models in order to create high-resolution data-series of atmospheric condition for Iceland and surrounding waters***
- ***Data is available in various formats (netCDF and API) for many of these data-series***
- ***We are gradually working on improving data access for academic and commercial use***

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