The 45th EWGLAM and 30th SRNWP Meeting
25 – 28 September 2023, Iceland

Veðurstofa Íslands

Vísindi á vakt

A bridge between science and community

The Icelandic Meteorological Office – A Multi Hazard Agency

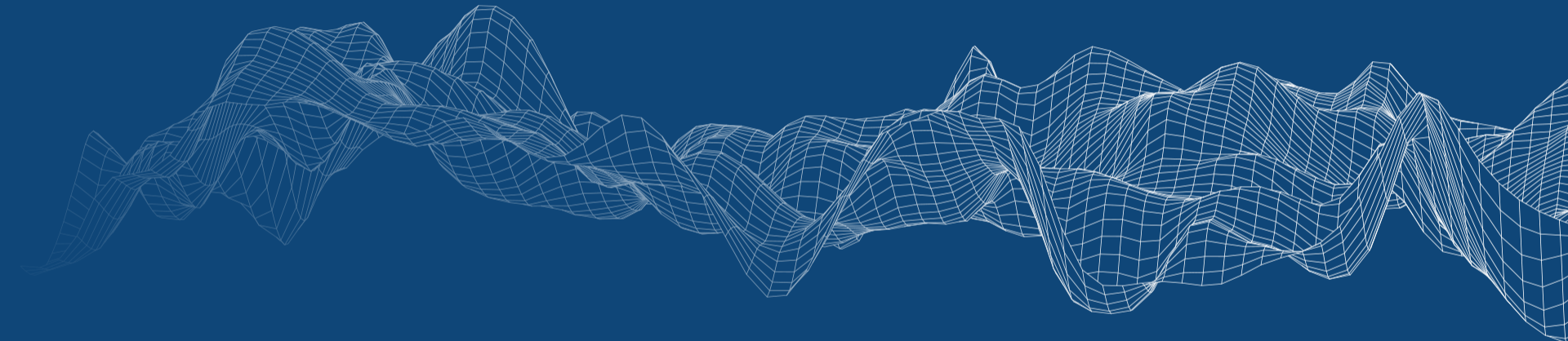
Matthew J. Roberts, Service and Research Division


Veðurstofa Íslands
Vísindi á vakt

Veðurstofa Íslands

Vísindi á vakt

“The Icelandic Meteorological Office is a multi-hazard agency dealing with the various forces of nature effecting Icelandic society”



The role of the Icelandic Meteorological Office (IMO)
Icelandic: *Veðurstofa Íslands*

More than the name suggests! The institute has a state mandate to monitor all forms of natural hazards, ranging from severe weather to volcanic eruptions

The office collates and analyses long-term observational datasets, such as air temperature records, crustal deformation, and seismicity levels

A central goal is to issue warnings to the public of impending natural hazards such as mass movements, floods, and volcanic unrest

Additionally, IMO is responsible for various forms of Earth-science research, including hazard and risk assessments

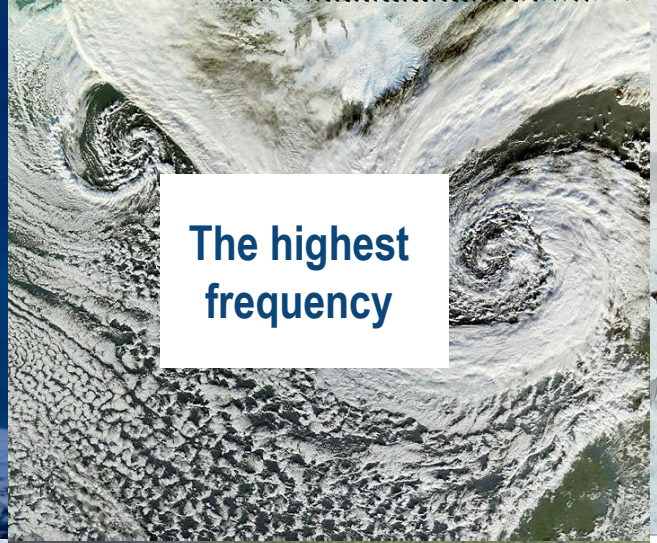






Icelandic Met Office


The greatest asset damage


The highest frequency


The greatest loss of life


Significant property damage


High frequency


Considerable damage

Icelandic Met Office

DIRECTOR GENERAL

Governance / Strategy / Human Resources / Communication / Research Strategy /International Cooperation / Quality and Safety Managment

CENTRES

Natural Hazards Services
Climate Services and Adaptation

SERVICE AND RESEARCH DIVISION

Weather Forecasting and Natural Hazard Monitoring	Volcanic Activity, Earthquakes and Deformation	Avalanches and Landslides	Climate, Weather, Water, Glaciers and Ocean

FINANCE AND ADMINISTRATION DIVISION

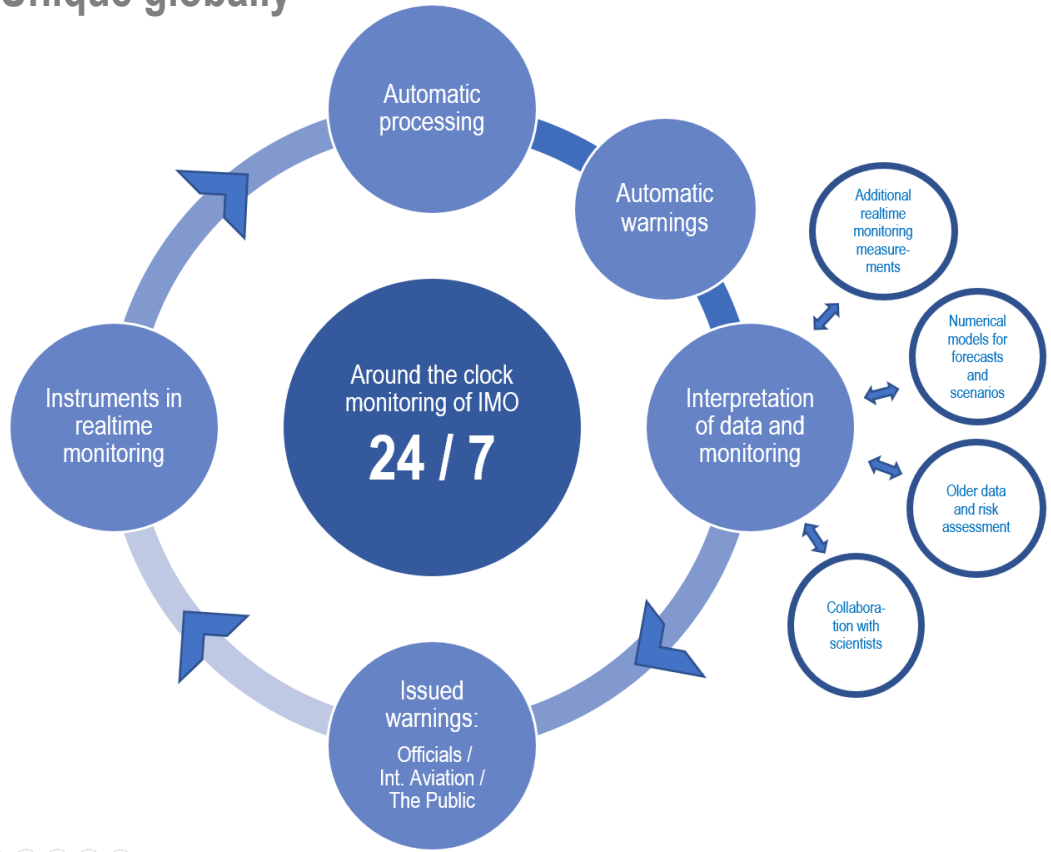
Finance and Operations
Facility Management
Service Desk
Library and Archives

INFRASTRUCTURE DIVISION

Observations: Management, Development and Maintenance
IT Infrastructure: Development and System Operations
Data Streams: Production and Quality Control
Management: Modelling, Remote Sensing and Geographical Information

Integrated monitoring at IMO

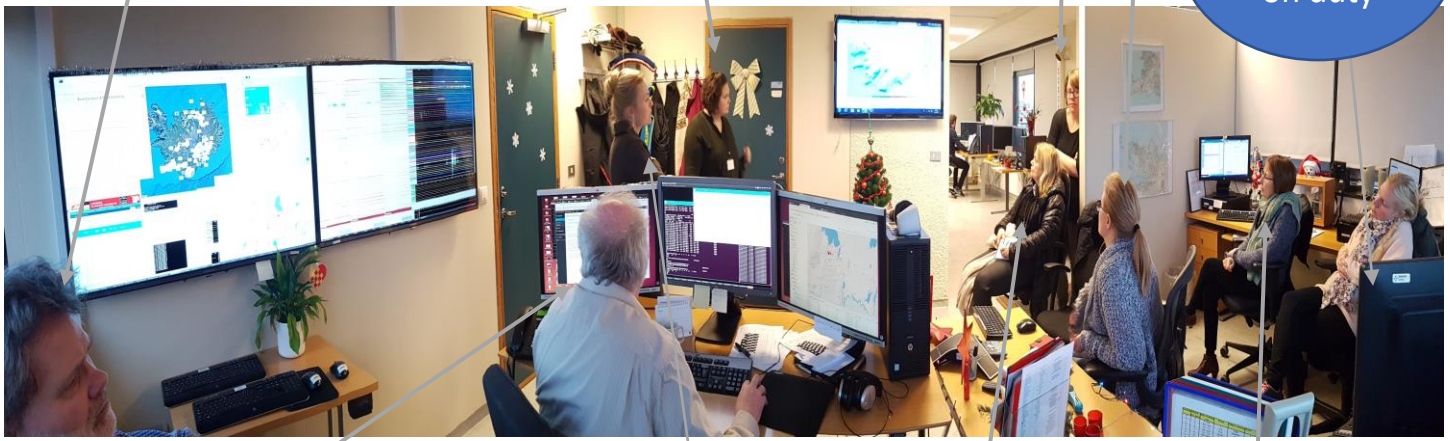
Unique globally



Icelandic Met Office

Collaborative meeting before a storm (pre-COVID)

Icelandic Met Office



Continuous (24 / 7) monitoring of natural hazards

Several nationwide networks

Earth

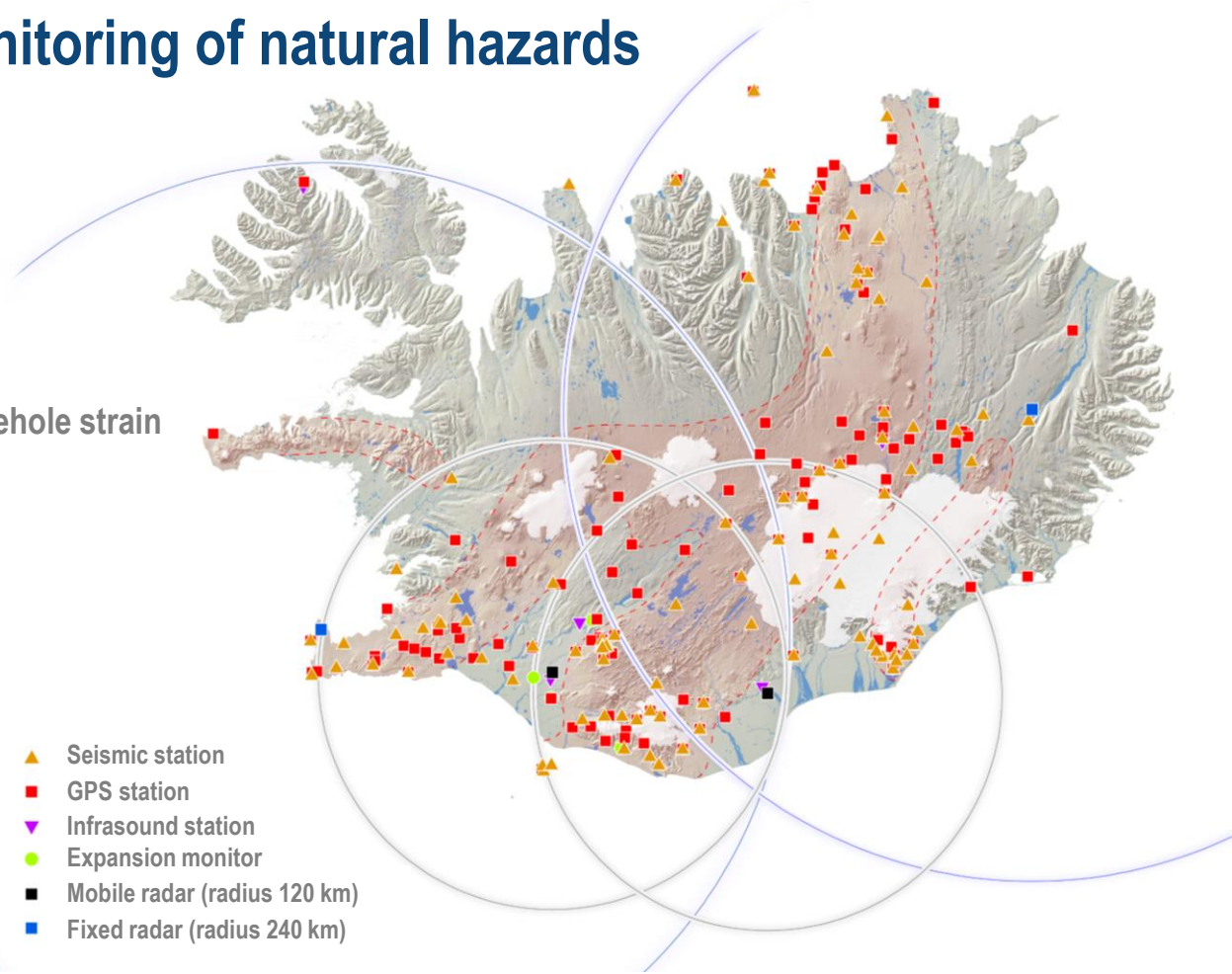
- Seismic stations
- GPS monitoring system
- Deformation sensors, including borehole strain

Atmosphere

- Weather stations
- Gas measurements
- Radars

Hydrology

- Water-level monitoring system
- Conductivity monitoring system
- Snow depth sensors



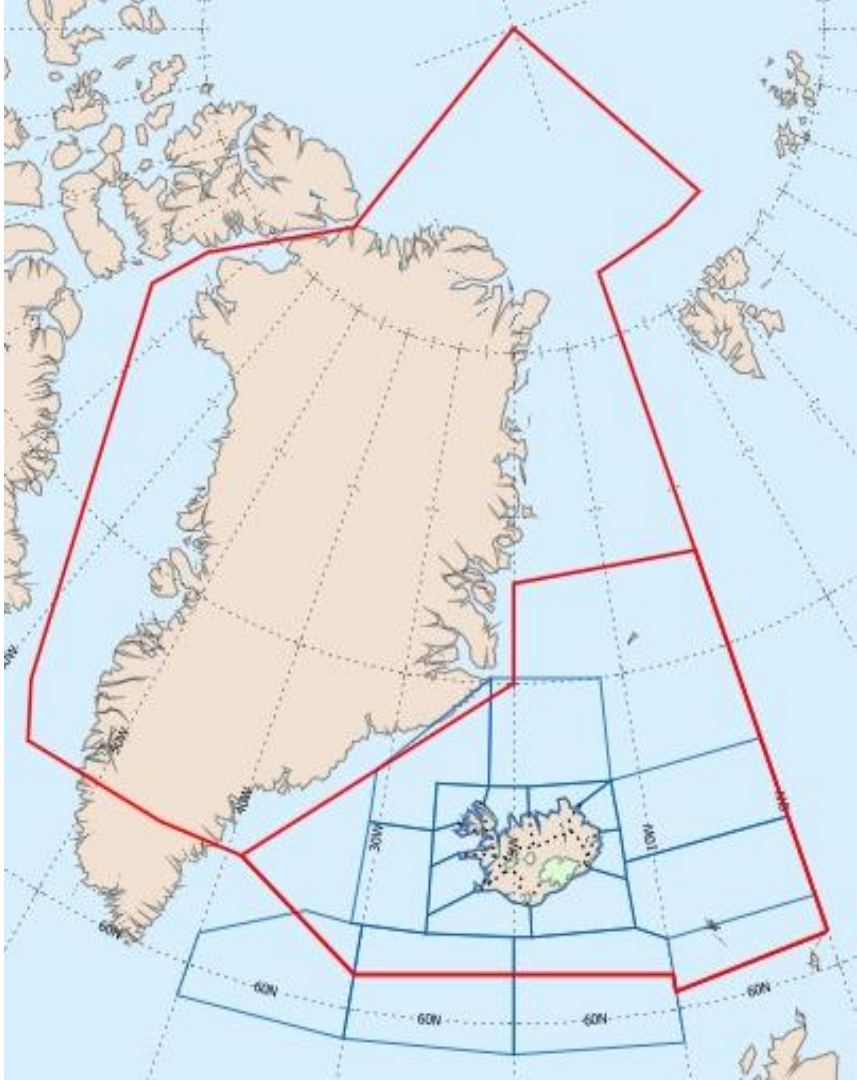
A huge aviation-control area

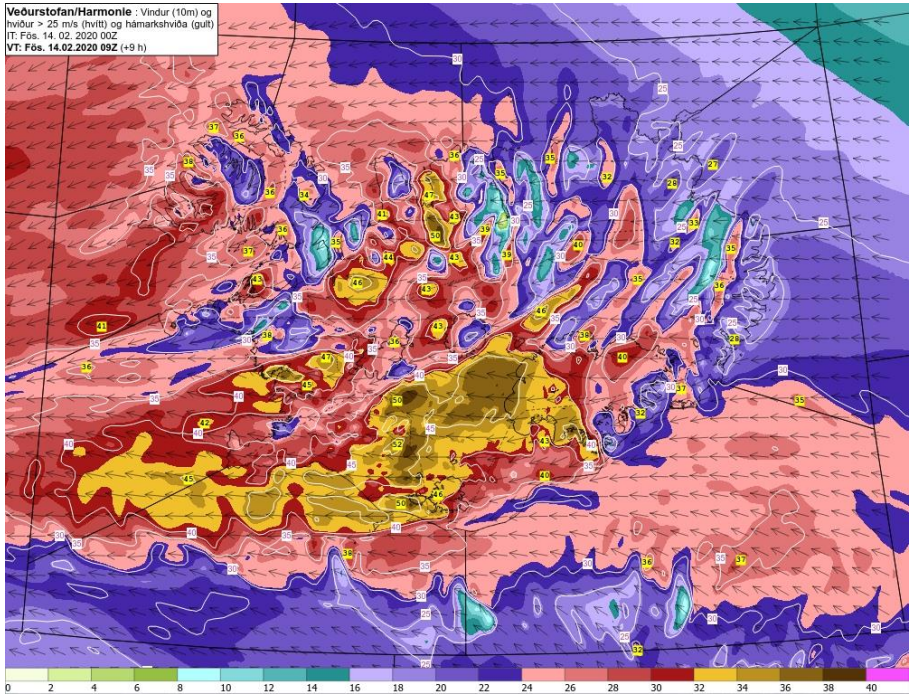
IMO monitors Iceland's aviation control area and forecasts turbulence, icing and mountain waves, as well as aerodrome forecasts for aviation.

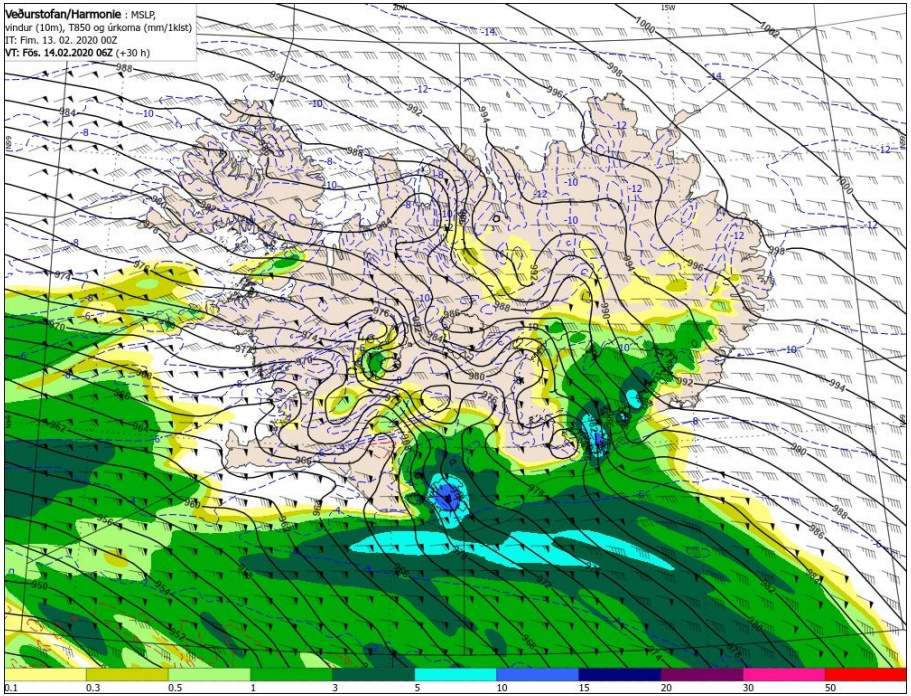
IMO is a "State Volcano Observatory", named by the Icelandic transport authorities and ICAO.

The Icelandic state volcano observatory includes:

- Monitoring of volcanoes.
- Monitoring of active eruptions.
- Monitoring volcanic ash and gas in the atmosphere.




Veðurstofan/Harmonie : Vindur (10m) og hviður > 25 m/s (hvítt) og hámarkshviða (gult)
IT: Fös. 14. 02. 2020 00Z
VT: Fös. 14.02.2020 09Z (+9 h)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40


Veðurstofan/Harmonie : MSLP, vindur (10m), T850 og úrkoma (mm/1klst)
IT: Fim. 13. 02. 2020 00Z
VT: Fös. 14.02.2020 06Z (+30 h)
0.1 0.3 0.5 1 3 5 10 15 20 30 50

Common alerting protocol – impact-based warnings

Icelandic Met Office

A WMO initiative to simplify communication of weather hazards worldwide while keeping the integrity of warning thresholds in each country.

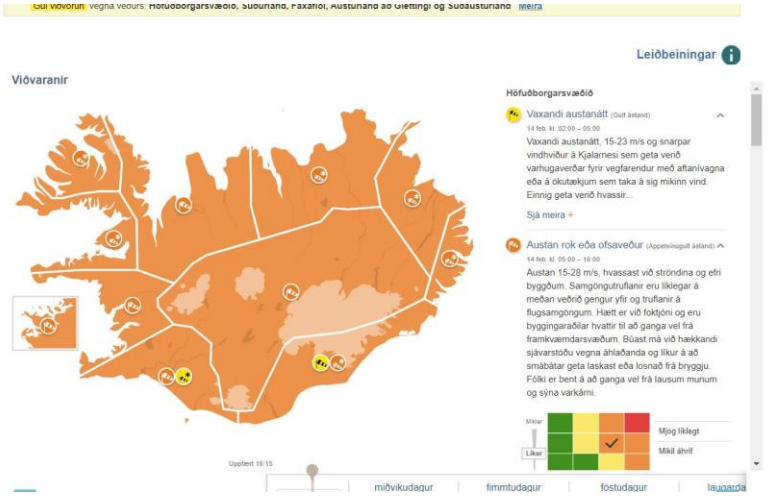
Became operational in Iceland in November 2017.

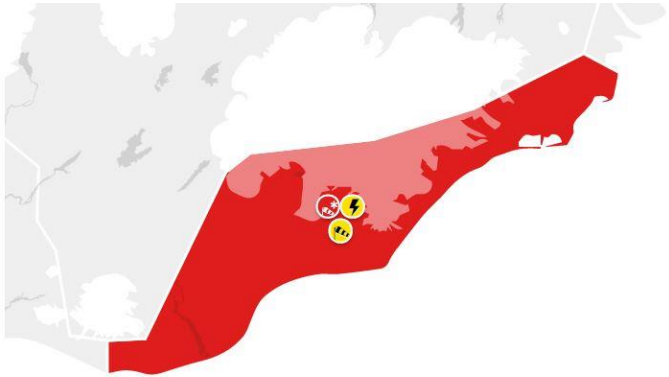
Currently used for weather, but landslide warnings in development to be launched this year.

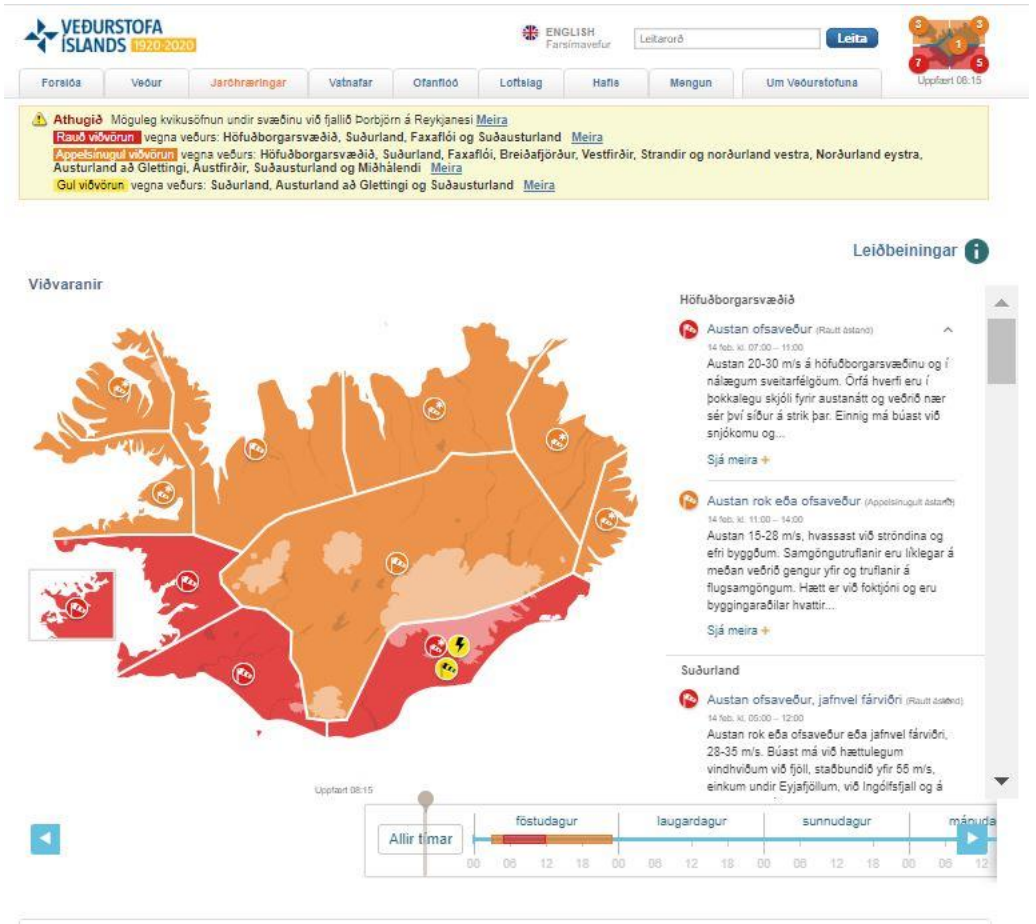
The system has had a major impact on the way we communicate hazards to the public and stakeholders.

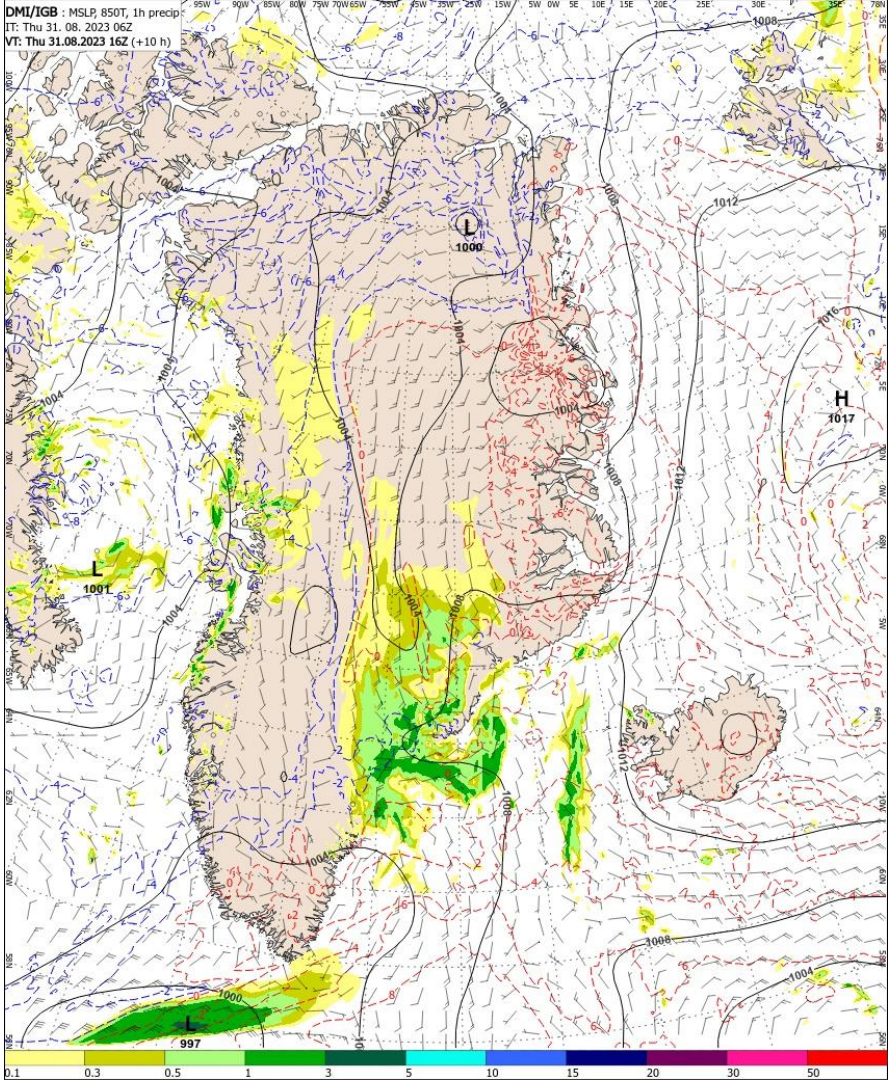
Impact Matrix of the Icelandic Meteorological Office

	Minimal or no hazard. No damage likely.
	Medium or high likelihood of medium impact weather which can have localized affects. This weather could affect travels between different areas of Iceland. The weather is potentially hazardous if precautions are not taken and can cause damages or accidents. Yellow warnings are fairly common and should not cause systematic disruptions to transport, public services or infrastructure. Yellow warning can also indicate the possibility of very severe, high impact weather 3-5 days ahead.
	Medium or high likelihood of medium or high impact weather. This weather can will likely have short term impact on transportation, public services and infrastructure. This weather may cause damages or accidents. Can be a threat to lives if precautions are not take. Amber warnings happen every year. Show caution and make the necessary arrangements.
	High likelihood of extreme weather causing high societal impact. Extreme weather with very hazardous conditions is forecasted. This weather can cause threat to life and property. High likelihood of nationwide disruptions to transportation, public services and infrastructure. Pay close attention to all available information and updates from IMO and Civil Protection.


Gul viðvörun vegna veðurs: Höfuðborgarsvæðið, Suðurland, Faxaflói, Austurland að Glettingi og Suðausturland Meira
Leiðbeiningar
Viðvaranir
Höfuðborgarsvæðið
Vaxandi austanátt (Gult ástand)
14 feb. kl. 02:00 – 05:00
Vaxandi austanátt, 15-23 m/s og snarpar vindhviður á Kjalarnesi sem geta verið varhugaverðar fyrir vegfarendur með aftanívagna eða á ökutækjum sem taka á sig mikinn vind. Einnig geta verið hvassir...
Sjá meira +
Austan rok eða ofsaveður (Appelsínugult ástand)
14 feb. kl. 05:00 – 16:00
Austan 15-28 m/s, hvassast við ströndina og efri byggðum. Samgöngutruflanir eru líklegar á meðan veðrið gengur yfir og truflanir á flugsamgöngum. Hætt er við foktjóni og eru byggingaraðilar hvattir til að ganga vel frá framkvæmdarsvæðum. Búast má við hækkandi sjávarstöðu vegna áhlaðanda og líkur á að smábátar geta laskast eða losnað frá bryggju. Fólki er bent á að ganga vel frá lausum munum og sýna varkárni.
Líkur
Mjög líklegt
Mikil áhrif
Uppfært 16:15
miðvikudagur
fimmtudagur
föstudagur
laugarda




VEÐURSTOFA ÍSLANDS 1920-2020
ENGLISH
Farsímavefur
Leitarorð
Leita
Uppfært 06:15
Forsíða
Veður
Jarðhræringar
Vatnafar
Ofanflóð
Loftslag
Hafís
Mengun
Um Veðurstofuna
Athugið Möguleg kvikusöfnun undir svæðinu við fjallið Þorbjörn á Reykjanesi Meira
Rauð viðvörun vegna veðurs: Höfuðborgarsvæðið, Suðurland, Faxaflói og Suðausturland Meira
Appelsínugul viðvörun vegna veðurs: Höfuðborgarsvæðið, Suðurland, Faxaflói, Breiðafjörður, Vestfirðir, Strandir og norðurland vestra, Norðurland eystra, Austurland að Glettingi, Austfirðir, Suðausturland og Miðhálendi Meira
Gul viðvörun vegna veðurs: Suðurland, Austurland að Glettingi og Suðausturland Meira
Leiðbeiningar
Viðvaranir
Höfuðborgarsvæðið
Austan ofsaveður (Rautt ástand)
14 feb. kl. 07:00 – 11:00
Austan 20-30 m/s á höfuðborgarsvæðinu og í nálægum sveitarfélgöum. Örfá hverfi eru í þokkalegu skjóli fyrir austanátt og veðrið nær sér því síður á strik þar. Einnig má búast við snjókomu og...
Sjá meira +
Austan rok eða ofsaveður (Appelsínugult ástand)
14 feb. kl. 11:00 – 14:00
Austan 15-28 m/s, hvassast við ströndina og efri byggðum. Samgöngutruflanir eru líklegar á meðan veðrið gengur yfir og truflanir á flugsamgöngum. Hætt er við foktjóni og eru byggingaraðilar hvattir...
Sjá meira +
Suðurland
Austan ofsaveður, jafnvel fárviðri (Rautt ástand)
14 feb. kl. 05:00 – 12:00
Austan rok eða ofsaveður eða jafnvel fárviðri, 28-35 m/s. Búast má við hættulegum vindhviðum við fjöll, staðbundið yfir 55 m/s, einkum undir Eyjafjöllum, við Ingólfsfjall og á
Uppfært 08:15
Allir tímar
föstudagur
laugardagur
sunnudagur
mánudag
00 06 12 18 00 06 12 18 00 06 12 18 00 06 12



Icelandic Met Office

Ongoing collaboration with DMI on the running of high-resolution weather model of the Greenland-Iceland area, as well and Faroe Islands.

A new project succeeding the current collaboration, United weather centres – West, DMI, KNMI, IMO and MÉ.

Icelandic Met Office

Fagradalsfjall

- Three eruptions since March 2021.
- Occurred close to the capital region.
- Created many hazard-management problems.
- Accurate weather forecasting products provided essential for advising the public on gas hazards.