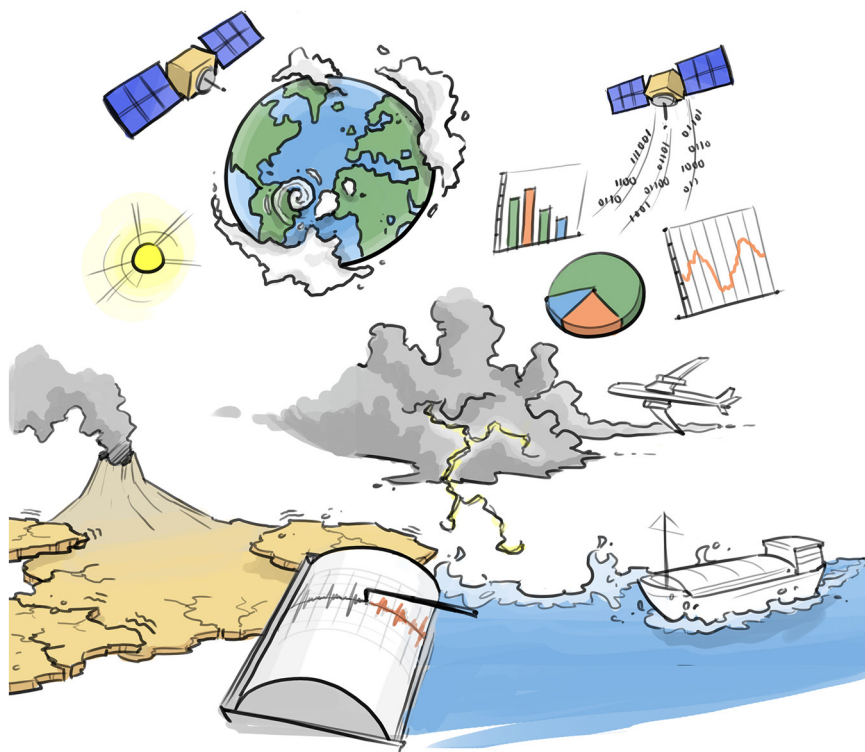




Royal Netherlands
Meteorological Institute
Ministry of Infrastructure and the
Environment

KNMI-strategy 2015 - 2020



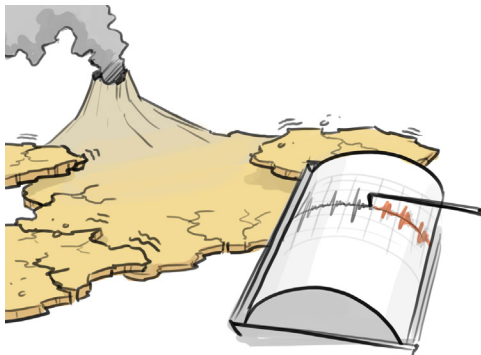


Summary

Society is becoming increasingly sensitive to extreme weather conditions, climate change, air quality, volcano eruptions and earthquakes. In order to help limit these increasing risks as much as possible, KNMI is introducing a new process: the risk-reduction-cycle. Just as in the past, we monitor and warn, but we are also going to offer advice and strategy prospects for both acute and future dangers. This will involve us actively drawing conclusions and lessons from past events in order to improve future advice and therefore reach risk reduction. We will be doing this, more so than in the past, together with our environment: the general public, authorities and (weather) businesses. We are perpetually innovating our service and thereby creating (sustainable) economic opportunities for business while we contribute to keeping the Netherlands safe, accessible and habitable. Our organisational set up and working methods are tailored to our mission, ambitions and duties.

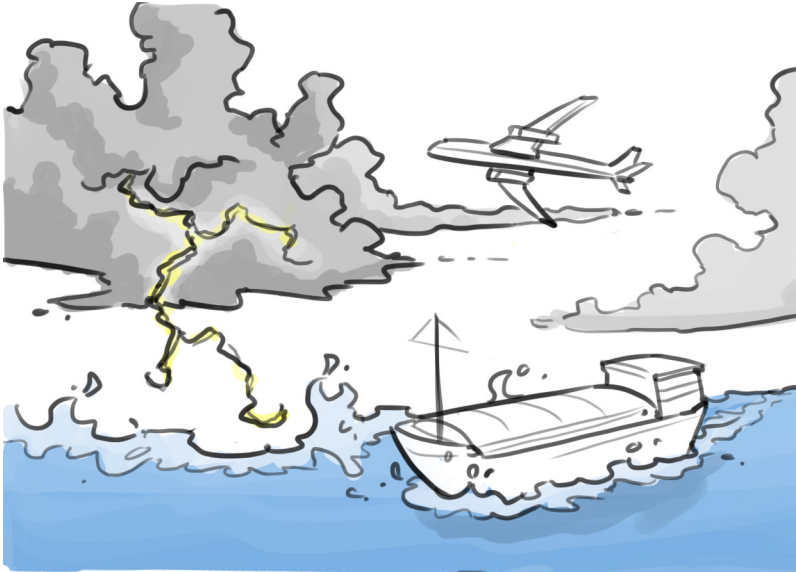
Introduction

The Netherlands is a densely-populated, highly-technical community in a delta area. In the event of disasters, the chance of human loss and economic damage is great, which is why safety, as well as habitability and accessibility, have been high on the political and social agenda for many years. Among other things, this includes the consequences of extreme weather conditions, climate change, earthquakes, air quality, volcanic ash and solar storms. In other words, disasters with atmospheric or seismic origins.



In order to limit the risk of such disasters, it is essential to gather and interpret, in close liaison with partners in the community, geophysical information about the atmosphere and the subsurface. To achieve this, central government will soon have a new legal duty of care and will appoint KNMI, as an agency of the Ministry of Infrastructure and the Environment, the unique task of guaranteeing both the gathering of information about the atmosphere and the subsurface and the translation of that information to risks to the community. This high-quality knowledge and information in the area of weather, climate and seismology, will have to be operationally available 24/7. In addition, this knowledge will have to be continuously improved and deepened in co-operation with research institutes, universities and businesses. New, technological developments and (inter)national collaborations will be used to achieve this.

Because of this new duty of care and the increased social interest in a safe, sustainable and accessible environment,



the position of KNMI is changing. In this new situation, KNMI primarily has an innovative role in the areas of security and knowledge management. KNMI also provides high-quality meteorological data to (meteo) businesses, data that they use to produce weather forecasts for the commercial media.

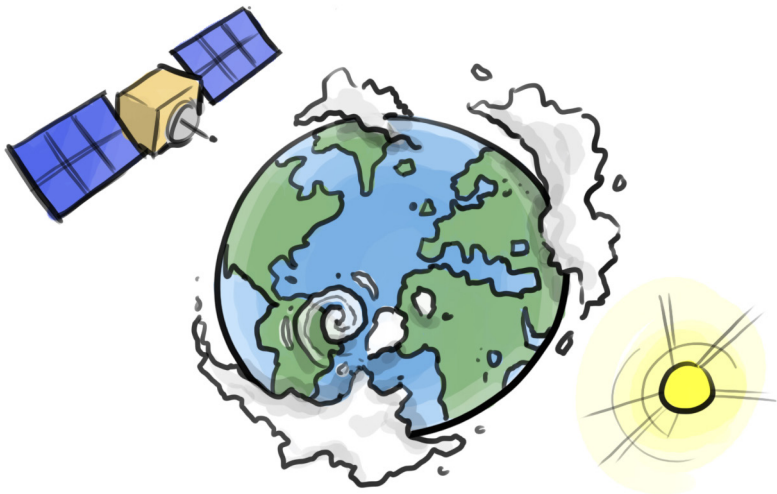
KNMI's new position brings with it the responsibility of ensuring that the authorities, policy makers, the aviation sector, businesses and citizens are well informed about possible risks with atmospheric or seismic origins. With this information, the various parties can take appropriate measures in time to prevent worse events happening and to develop innovations for risk management. This demands a KNMI whose methods are

issue-driven and who can therefore act quickly, closely respond to social demands and optimally support policy development. All these developments have led to a revision of KNMI's mission.

Mission

KNMI advises on and warns society about reducing risks with atmospheric or seismic origins. KNMI develops high-quality knowledge, carries out observations and translates them into products and services

that reduce safety risks, contribute to a sustainable society and promote economic opportunities.



Vision - KNMI in 2020

In 2020 KNMI is an independent authority in the field of weather, climate, air quality, seismology and other geophysical phenomena. Risks with atmospheric or seismic origins are signalled in time by KNMI. KNMI provides society with reliable information and makes this information applicable by accompanying it with advice, taking the receiver's specific demands into account. KNMI has a front and a back office. The front office is a warning and advice centre where our advisors are ready to help receivers 24/7, whether the issue relates to a warning for the wider public, data production for weather forecast providers or questions about climate change. More complex issues for the long term are innovatively and expertly dealt with in the back office. Because of continuous interaction between the front and back office, the service offered continues to improve. We also pay particular attention to our partners' action perspectives in order for us to match our service as closely as possible.

KNMI ensures good access to data, products and information, in accordance

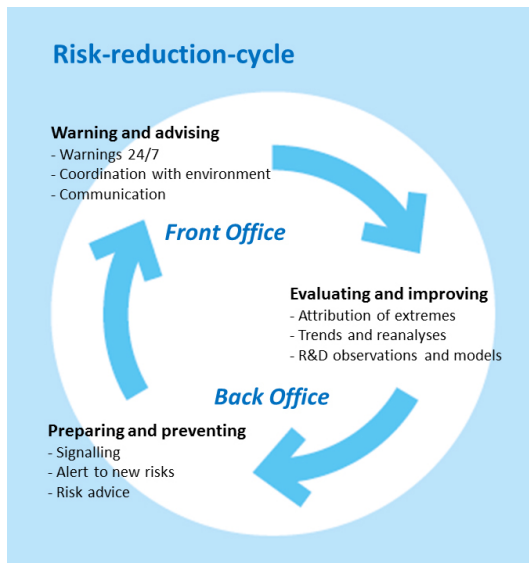
with the open-government principle. Making this data and the products freely available contributes to the development of economically-viable and sustainable innovations because weather, climate and seismology are of increasing interest to almost all groups in society.

KNMI plays a significant international role. This is because (i) services benefiting climate policy are only useful in an international arena; (ii) weather and climate information can only be gathered cost-effectively through international infrastructures (namely WMO, EUMETSAT, EUMETNET, ECMWF); and (iii) developing high-quality knowledge within Europe demands participation in framework programmes.

Strategy

The basic principle of the mission is to inform, advise and warn Dutch society about risks with atmospheric or seismic origin. In order to do this as effectively as possible, we distinguish three successive main activities linked to every geophysical risk. We call this the risk-reduction-cycle

and we combine them in a front and back office functionality as shown in the figure below. We focus in particular on connecting the three main activities (blue arrows in the figure).

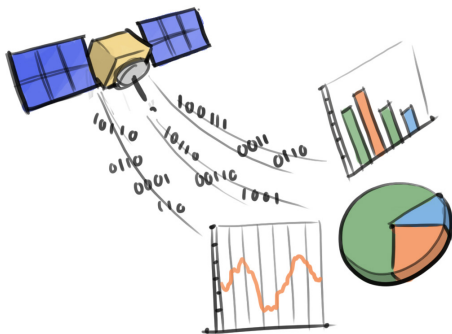


The risk-reduction-cycle aims at always being prepared for possible (new) risks, being in an optimal position to warn of them, and learning from past events. Because the geophysical environment and Dutch society is constantly changing, the risk-reduction-cycle offers KNMI, as a continuously learning organization, the opportunity to deliver the best products and services, both now and in the future. By utilizing available knowledge and constant innovation, KNMI also contributes to a sustainable society and economic opportunities for the Netherlands.

The risk-reduction-cycle has three main activities, each with a number of tasks that are elaborated on below:

1. **Preparation & Prevention:** We signal (new) risks of an atmospheric or seismic origin and advise risk managers and the public about these possible risks.

In order to do that we monitor the geophysical environment by taking in-situ satellite measurements, making weather

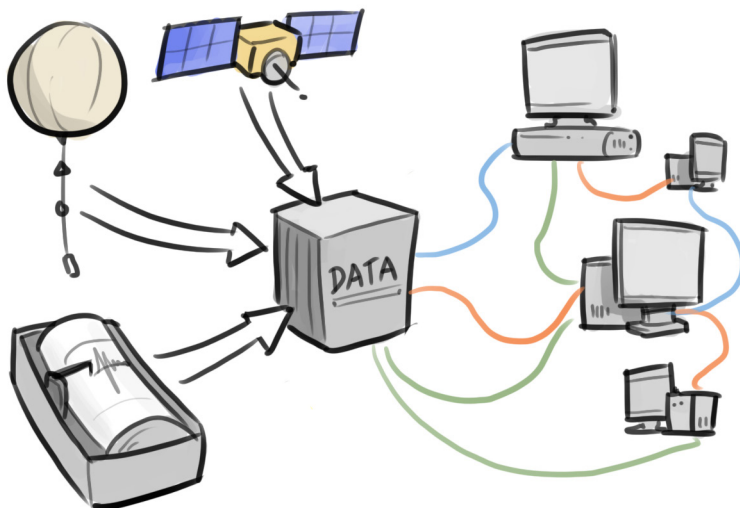


predictions and developing climate scenarios. Using this information, and our experience, we signal potential risks (e.g. floods, extreme weather conditions). We are alert to new risks, such as cascade effects, gas quakes, hurricanes in the BES islands, volcanic eruptions and solar flares. We sometimes also offer internationally-related advice in order to contribute to the global mitigation of geophysical risks.

2. **Warning & Advising:** We give warnings when an incident arises, support and guide our partners in the safety chains and ensure clear communication. In the coming years, and together with chain partners, KNMI will explore and integrate action perspectives into the warning system.

Our 24/7 Front Office is always alert to possible geophysical incidents, informs and warns, and supports our partners with our knowledge, models, measurements and advice. We can put the impact of incidents into a national and international context and coordinate with the relevant parties (e.g. the private weather companies with weather alerts, crisis teams in the event of chemical or nuclear disaster, and the aviation sector with volcanic ash). As an expert crisis coordinator, we communicate our information and knowledge about incidents that have occurred to the public, the press and the authorities.

3. **Evaluating & Improving:** When an incident occurs, we can put it into a broader context. This enables us



continually improve and innovate our service.

We analyse the origins of incidents of (extreme) weather conditions, climate and seismic situations, and we interpret them (attribution). We carry out research in order to reduce the differences between modelled and occurred situations, to improve predictability and to fine-tune impact analyses. We develop and manage (national and international) data archives for trend analysis and reanalysis in the areas of meteorology, seismology and atmospheric composition, and put occurred changes and extremes into historical and international context. Our data archives and analyses are available to the general public and to professional users. Through continual innovation, we continually improve our measurements (above-ground, below-ground, from satellites), forecasts (assimilation,

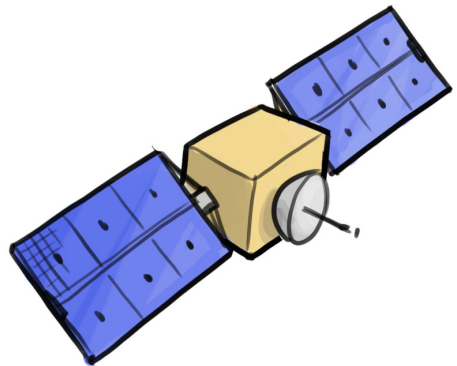
short-term forecast, statistical post-processing), and processes (e.g. interaction between climate and air quality, sea level rise). We work as much as possible to international standards, such as those of the WMO, so that our processes and methods are transparent and in line with developments in other countries.

The main activities and the related tasks listed above, and with them the front and back offices, are connected through the risk-reduction-cycle: experiences in the front-office serve as a guide for improvements in preparation and prevention, and vice versa.

Infrastructures

KNMI is responsible for a number of important infrastructures in the Netherlands; namely the knowledge infrastructure for geophysical information, the model infrastructure, the observational infrastructure and the ICT infrastructure. A number of these infrastructures are directly connected with the Minister's legal duties. KNMI is also involved in the meteo infrastructure of third parties, such as Defence and Aviation. Other infrastructures are linked to the international meteorological and seismological infrastructure and international collaborations. Certain components, such as satellites, data centres and the Cabauw national observatory, are developed in cooperation with (inter)national partners for reasons of efficiency. These collaborations can be bilateral, but they happen mainly through organizations like EUMETSAT, EUMETNET, ESA, WMO, ECMWF, EU COPERNICUS, etc. Over the coming years KNMI will develop a strategy for the infrastructures that takes the new mission, technological developments and possibilities, and the wishes of government, partners and society into account.

The organization of the front and back offices will be an important activity in the coming years. The infrastructures will be aligned to the products and services of the risk-reduction-cycle. The necessary knowledge infrastructure will not only be laid internally, but we will also strive for optimal interaction with knowledge institutes, universities, SMEs and colleague institutes both national and international.

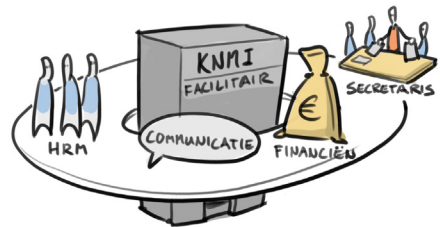


Method, culture and core values

A significant challenge for KNMI relates to demand-led working. Greater dynamics in demand articulation requires adjustments in working methods and culture, and in the organization's core values.

The department model has been chosen for the internal organization, in combination with a number of business managers who focus on the development of the demand and on obtaining orders. Specific knowledge will be pooled within the departments and the challenge lies in getting the risk-reduction-cycle part of the duties of all the departments.

The new mission, combined with demand-led working, requires greater external focus and flexibility from the organization. The responsibilities also demand a high-quality knowledge basis. This demands flexible co-workers who are conscious of their roles and their responsibilities, who have a good understanding of our working methods and methods outside KNMI, and who can work well with their colleagues in the risk-reduction-cycle. This is why KNMIers



are always seeking improvement in the service and have intense contact with partners in the community; for some that will be universities, for others customers, clients or market parties. This reflects the core values: flexible, collaborative, innovative and result-driven.

In order to facilitate all this effectively, flexibility is stimulated by the KNMI Sm@rtwork concept, knowledge management by a new HRM strategy, and a new communication strategy and a new international strategy are being developed.



The KNMI strategy 2015-2020 has been prepared by the KNMI Strategy Commission: Gerard van der Steenhoven (Chair), Floortje Hanneman, Bart van den Hurk, Pieternel Levelt, Bert van den Oord and Peter Siegmund (Secretary). The strategy has been agreed by KNMI's Executive Committee.