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What does it mean to be a data researcher and platform facilitator of crowdsourced weather observations?

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In 2011 the UK Met Office established the Weather Observations Website (WOW) initiative, a global-coverage project in which users of personal weather stations (PWS) can contribute their weather observations to a central repository. In this decade, more than 10,000 PWS around the world have contributed 2 billion measurements to this project, with a remarkable presence of WOW users in Europe. The Dutch Met Office (KNMI) joined this initiative as partner in 2015. In the past 8 years, 1,000+ PWS located in the Netherlands have collected 250+ million observations of the most relevant weather variables, and the interest of the Dutch public in this network continues growing.

In this context, the KNMI has two main roles with respect to WOW-NL observations: *Platform Facilitator* and *Data Researcher*. The KNMI facilitates WOW-NL to the public via the portal <http://wow.knmi.nl>, which enables visualizing the latest observations in a map, allows querying to inspect the historical data contributed by each station, and provides a space for news. As platform facilitator, the KNMI aims for a measurement system of PWS that provides optimal added value to our science and services. The Data Research teams at KNMI have dedicated continuous efforts to develop quality controls (QC) enabling a full quality assessment of the WOW-NL observations. The latest results show that the application of QC methods yields promising results for air temperature, rainfall, and wind speed measurements. This means that WOW-NL observations may have sufficient quality to be incorporated into successive research or operational workflows and become part of the 'daily business' of the organization.

These two roles are designed to work independently, but we believe that bringing them together would positively and effectively impact quality of data for the organization's science and services. Hence, how can we interlace them most optimally in a feedback loop and take them to the next level? How can we expand the *Platform Facilitator* role, to stimulate and provide guidance for citizens to obtain quality of crowd sourced data most optimal for our science and services? How to enable the *Data Researcher* role to deliver peer-reviewed scientific content to a broader audience and in a real-world set up? Last but not least, how to establish a dialogue with the users to create a community ensuring long-term data provision for national meteorological services?

In this work we investigate the relationship between the *Platform Facilitator* and the *Data Researcher* roles to balance investment in actions "upstream" (e.g. network design, PWS location)

vs “downstream” (e.g. metadata, statistical QC procedures). We also elaborate on how the inclusion of WOW-NL in operational workflows might require revisiting or creating new policies for crowdsourced data or assessing the readiness of the digital infrastructure of the organization.