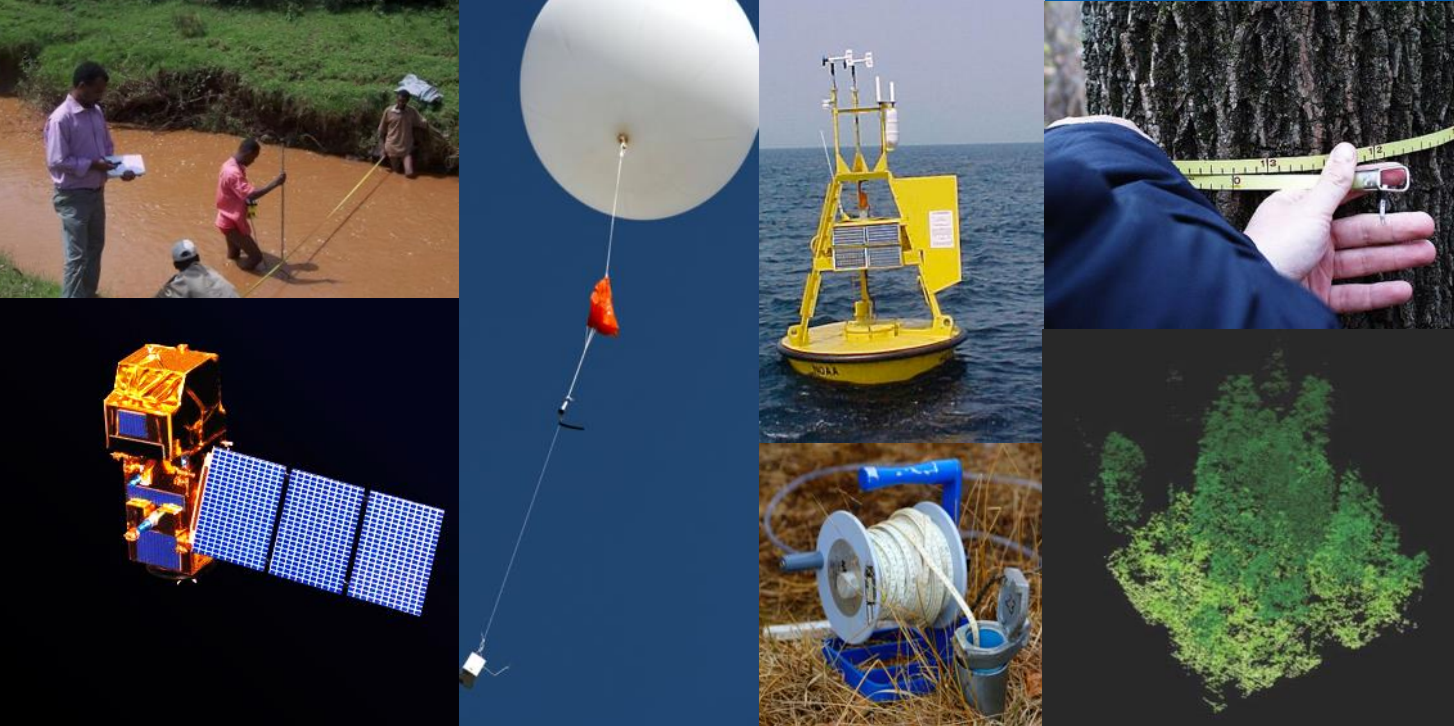




COVID-19 and climate observations – impact and responses

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Supported by the European Union



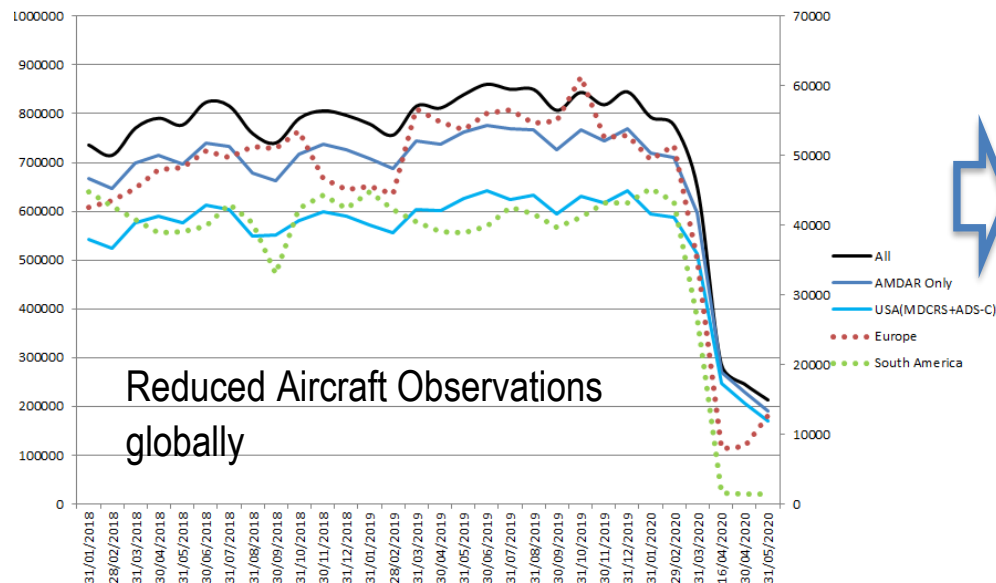
Monitoring of Climate Networks

- WMO has been improving the monitoring of the status of observations and access to the data
- WMO's WIGOS Data Quality Management System (WDQMS, <https://wdqms.wmo.int>)
 - Provides information on the status of reporting of observations in near-real time
 - WMO and GCOS are extending this to include the GCOS Climate Networks, the GCOS Surface Network (GSN) and the GCOS Upper Air Network (GSRN)
 - Work is also underway to provide similar information on ocean observations to complement the work of JCOMMOPS
- In general
 - Aircraft observations have drastically reduced
 - Manual surface observations are badly hit in places that already have insufficient resources for observations and hence little resilience
 - Automatic observations are less impacted but the effects of lack of maintenance and calibration will accumulate and impact the climate record in many locations
 - Satellite observations have not been impacted – showing the benefits of a composite system
- This will lead to:
 - Degradation of climate monitoring
 - Degradation of weather forecasts globally
 - Significant impacts on local forecasts, and emergency warning systems in the countries lacking observations
- Updates at <https://public.wmo.int/en/media/press-release/covid-19-impacts-observing-system>
- WMO is coordinating global monitoring and working with Members to identify risks
- GCOS will include the impacts of COVID-19 in their upcoming revision of the status report

Aircraft-Based Observations

Monthly mean observations per day on WIS Larger Programs (Since 2018)

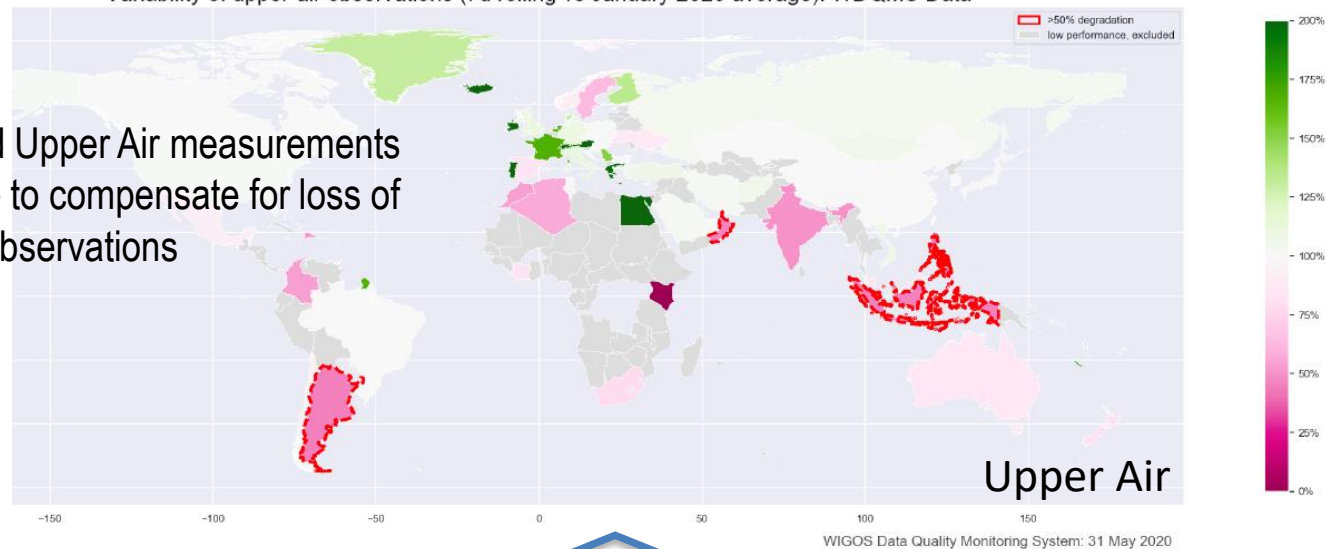
Left Axis: solid lines
Right Axis: broken lines



Increased Upper Air measurements in Europe to compensate for loss of Aircraft Observations

Impact of COVID-19 on climate observations

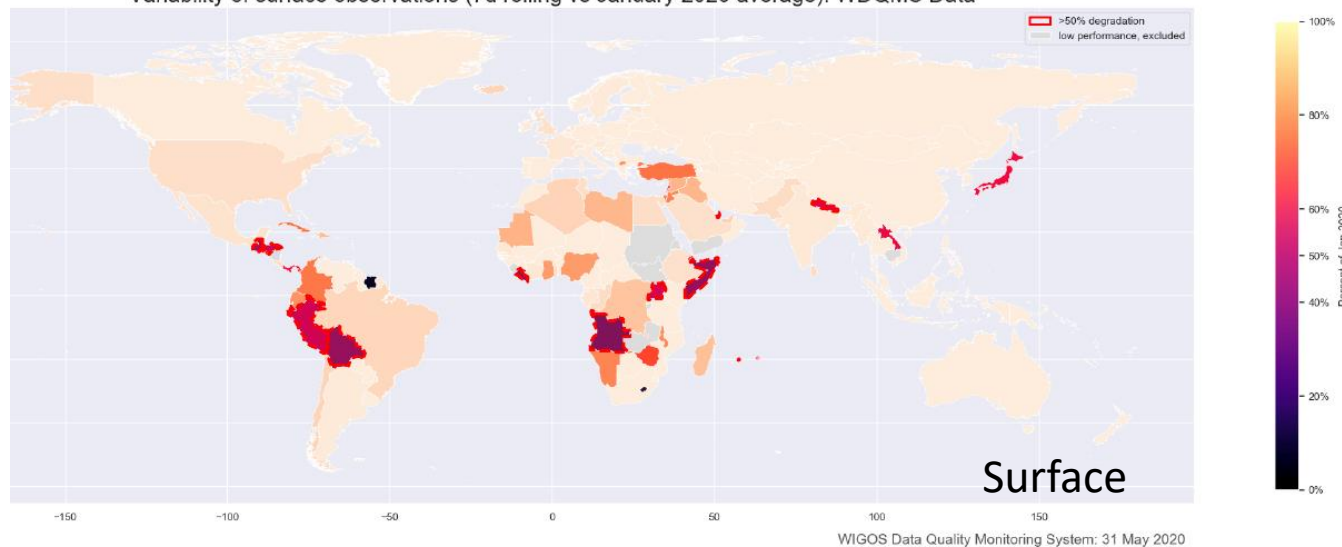
Variability of upper-air observations (7d rolling vs January 2020 average). WDAQMS Data



Reduced Observations in some countries with manual observations



Variability of surface observations (7d rolling vs January 2020 average). WDAQMS Data



Other Surface Observations

It is difficult to quantify the impact on other observations (e.g. cryosphere, biosphere), as these are not (yet) monitored daily

Surface observations are being interrupted where they are made manually and there is a slow degradation of automatic measurements where maintenance and calibration cannot be performed.

e.g. the Long-Term Ecological Research programme (LTER) in the US, noted that this might lead to the first interruption in more than 40 years at some sites.