Future View of Satellite Meteorology

David Grimes
President, WMO

Keynote Address
NOAA Satellite Conference
July 17th, 2017
Earth Observation ... humble beginnings

1946: Rocket-borne cameras capture first look at Earth from beyond the atmosphere

1960: TIROS-1
First meteorological satellite

1964: Hurricane Gladys, as seen by NASA’s Nimbus 1

1968: Earth viewed by Apollo 8
Weather map from 20 May 1960 (top) with artist rendering of clouds from the TIROS-1 photographic-mosaic taken that same day (bottom)
Satellite Data are critical to WMO’s Future Weather Forecasting Architecture

Numerical Weather Prediction performance can be largely attributed to the assimilation of increased volumes of satellite data
Environmental Satellite information will be increasingly important for WMO’s Planned GDPFS Architecture

Seamless weather and climate prediction is at the heart of WMO’s vision for enhancing future forecast capability.
Drivers influencing the future of Global Observing Systems

- 2030 Agenda for Disaster Risk Reduction
- 2016 Paris Climate Agreement
- 2030 Agenda for Sustainable Development

Science and Technology
Commercialization
Trends in S&T and New Players

Cube / Nano / Small Sats
Constellations
Intelligent Satellites

Data Cubes for Integrated analysis
Mobile applications / Citizen Science
Increasingly High Resolution (spatial, spectral, temporal)
RESPOND TO USER NEEDS
• Respond to the needs of all WMO Members and Programmes for improved data products and services, for weather, water and climate and to enable more efficient and effective service delivery

INTEGRATION
• Integrate current GOS functionalities, which are intended primarily to support operational weather forecasting, with those of other applications
• Ensure efficient and robust systems that effectively underpin climate applications and related decision-making.

EXPANSION
• Expansion in both the user applications served and the variables observed, including in support of the production of ECVs
• Explore private sector innovations where efficiencies are offered

AUTOMATION
• Develop fully automatic observing systems, using new observing and information technologies, where it can be shown to be cost-effective
• Making Global Observations accessible to all

CONSISTENCY
• Increased standardization of instruments and observing methods; with improvements in calibration of observations and the provision of metadata, to ensure data consistency and traceability to absolute standards
• Ensuring respect for resolutions on free and open data
Constellation of Satellites
In Summary... It’s a Global Enterprise
Satellite monitoring are essential to inform our understanding and actions with respect to reducing losses of life and property, resilience to climate risks and enhancing socioeconomic value from hydro-meteorological and climate services.