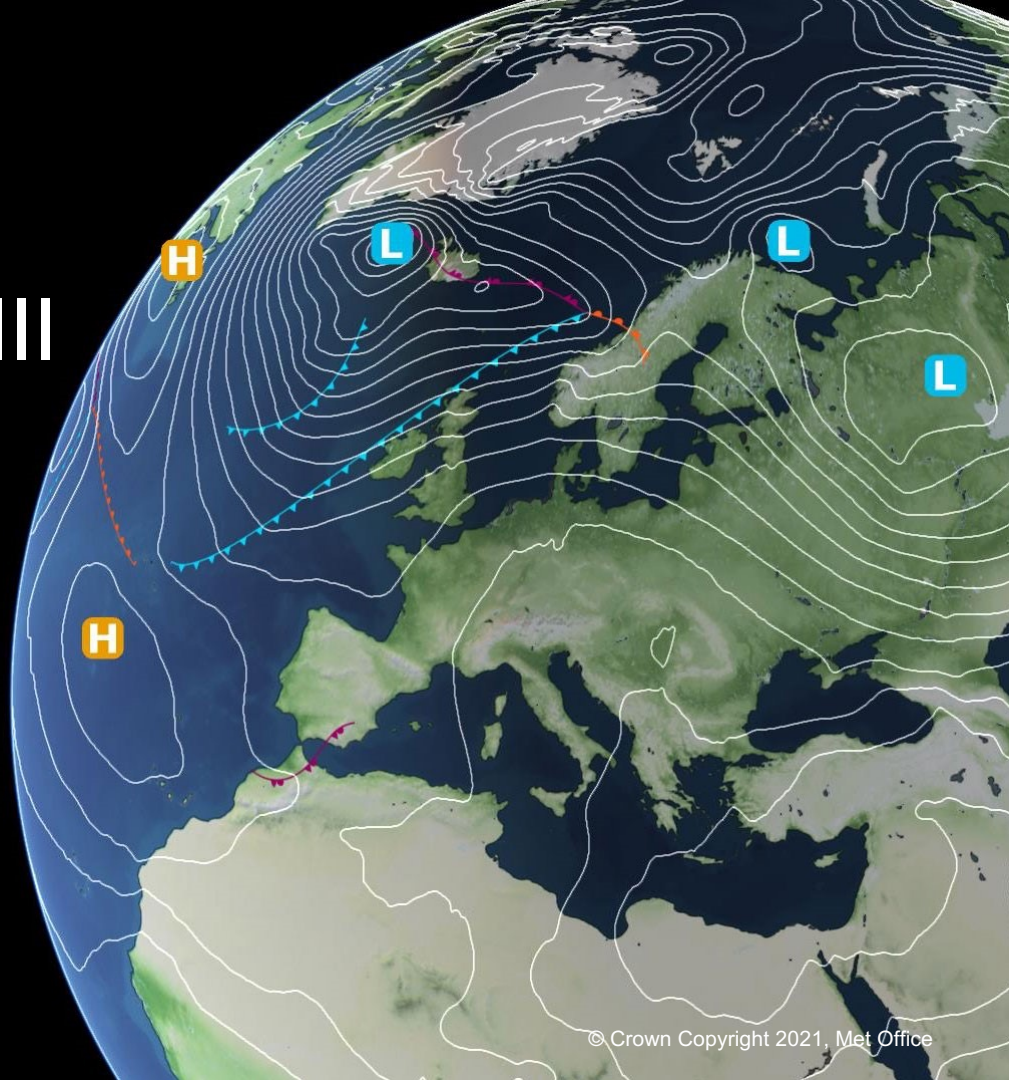


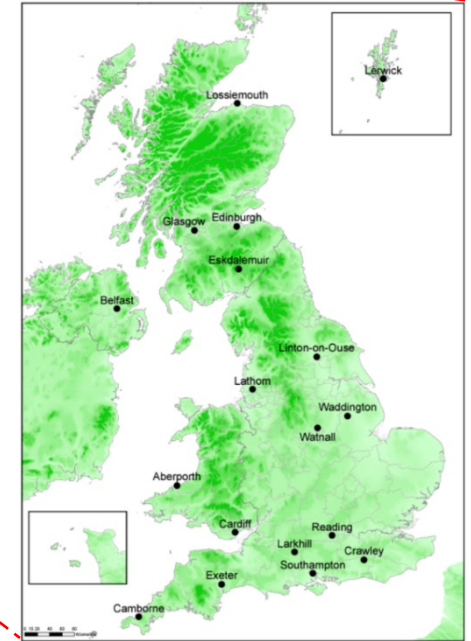
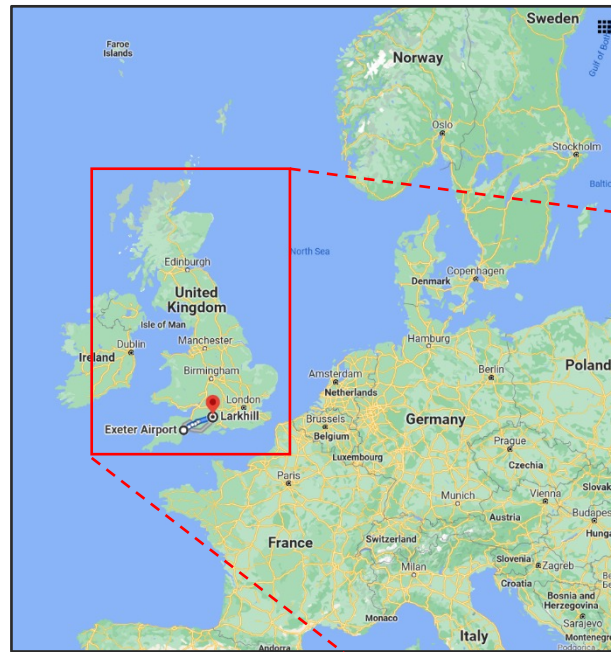
A Reflection on IPC-XIII

David Hiscock
Met Office, UK

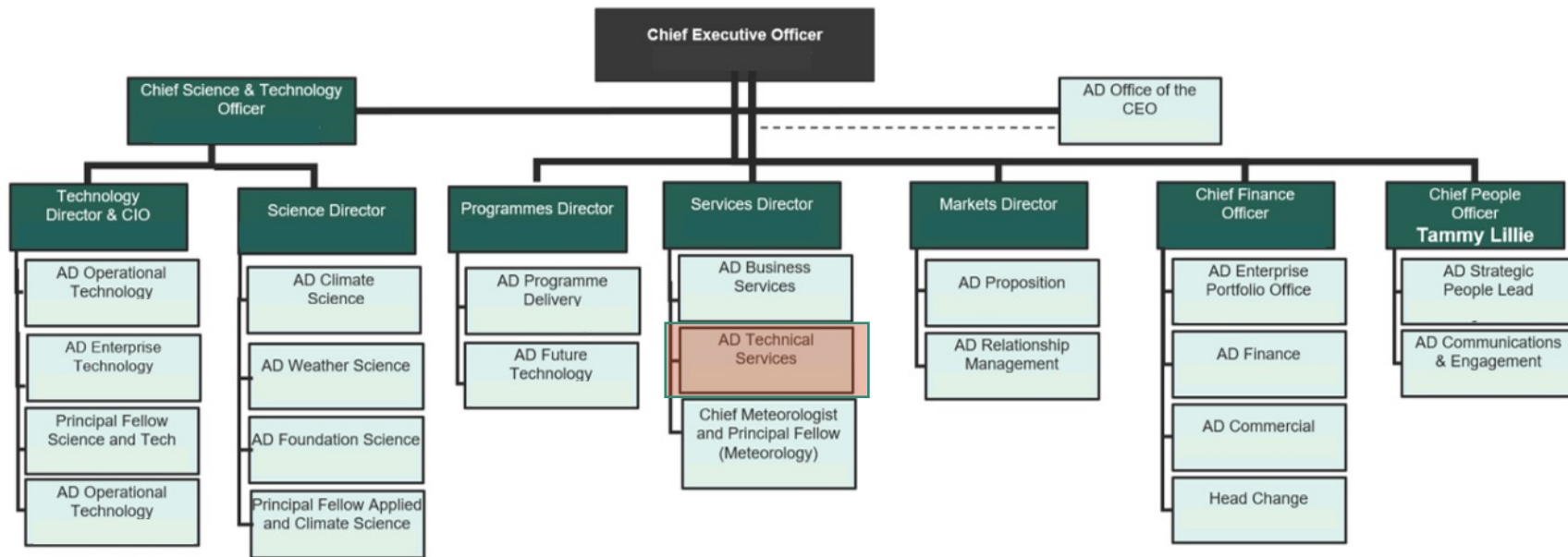


Where am I?

- In the UK
 - South West
 - 2hr drive to HQ
- In the company
 - Observations Services
 - Transition and Data quality

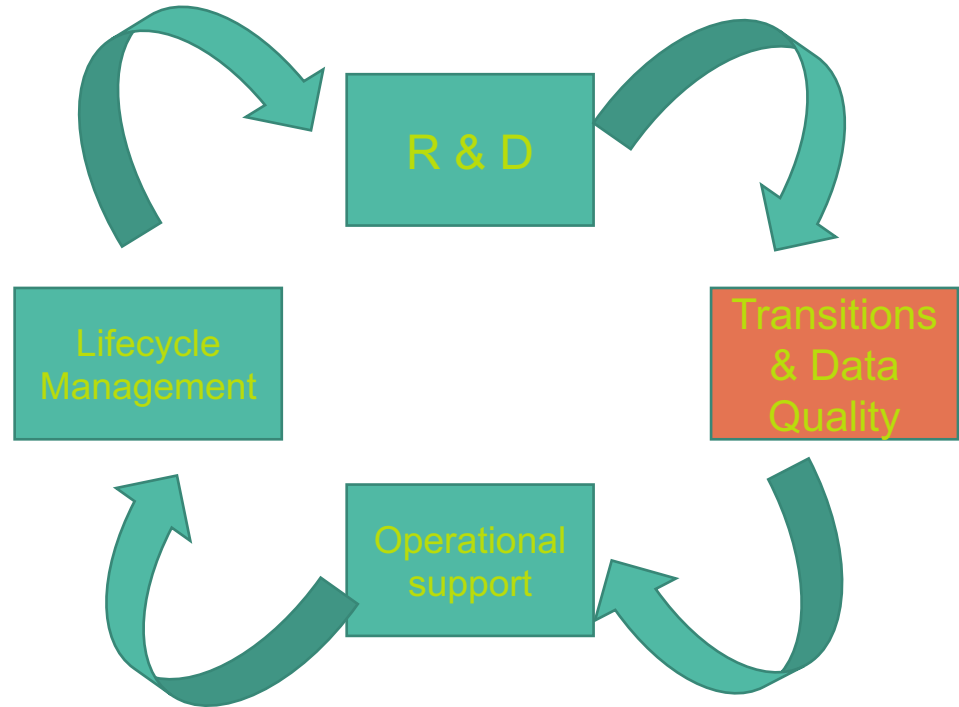


Met Office structure



Team role

- System Design / Integration
- Site design / Integration
- Resource management
- Release management
- 4th Line support
- Installation engineering
- Training standards

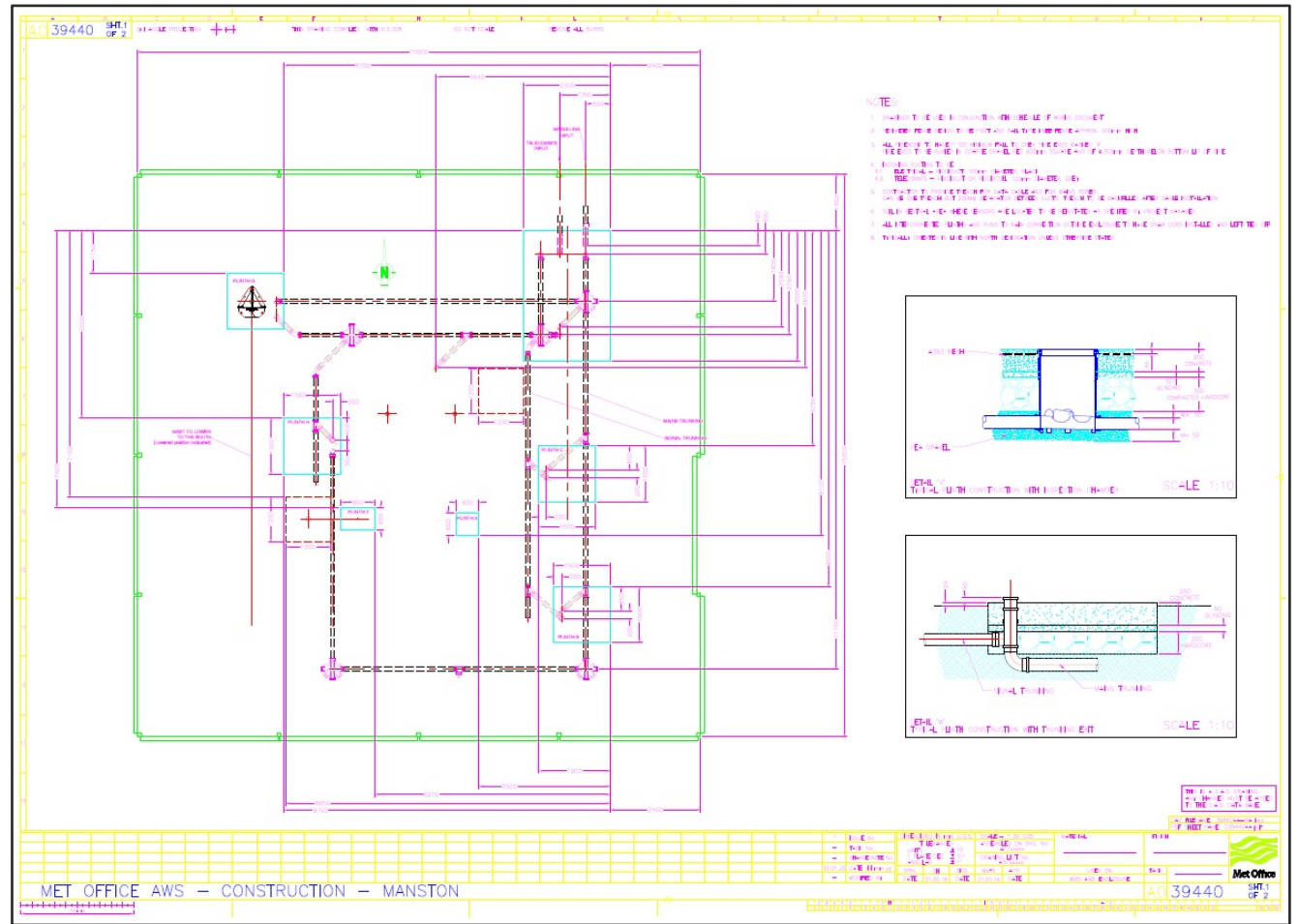


Who am I?

- Before Met Office
 - Building, decorating, groundworks, electricians assistant, mechanics assistant...
 - Electronics engineer for test and repair in industrial production facilities
 - Mature student Undergraduate degree BSc (Hons) in Music Systems Engineering – signal chain from recording to reproduction
- Met Office – ten years
 - Field Service Engineer for 4 years – Servicing / fixing Automatic Weather Stations (AWS's)
 - Installation Design Authority for 5 years – designing AWS's
 - 1 year ago encouraged to apply for job to manage a new team of 12 engineers responsible for installing AWS's
 - Technical writer / editor / communicator
 - Equipment and sensor installation instructions
 - AWS installation design specifications
 - Plain language translator between technicians/engineers and project managers, senior leadership, contractors, legal teams, scientists and probably some more...

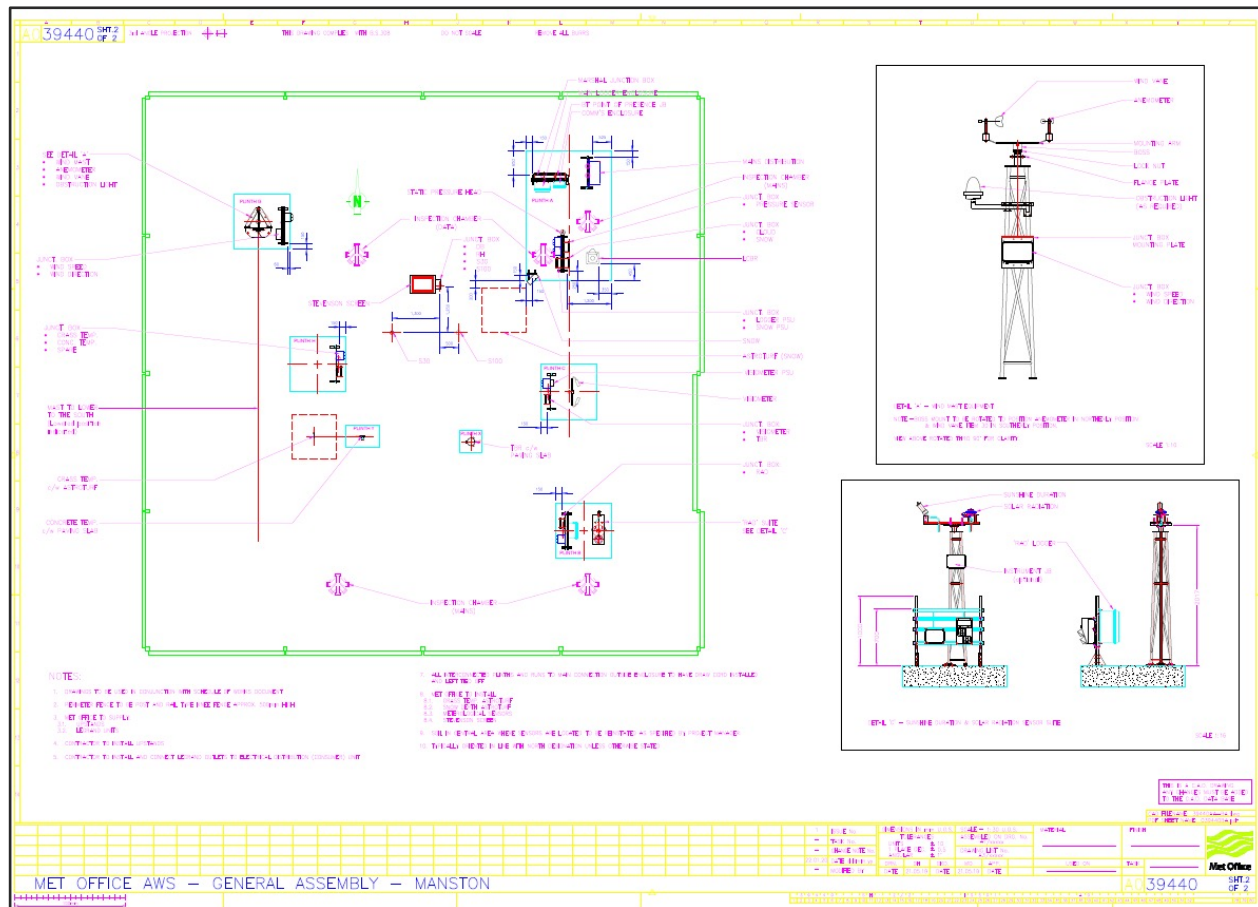
Designs / Specifications

- For contractors
- Concrete
 - Instrument stands
- Ducts
 - Power
 - Comms
- Fencing



Designs / Specifications

- For clients
- Meteorological standards
- For contractors & engineers
- Electrical regulations

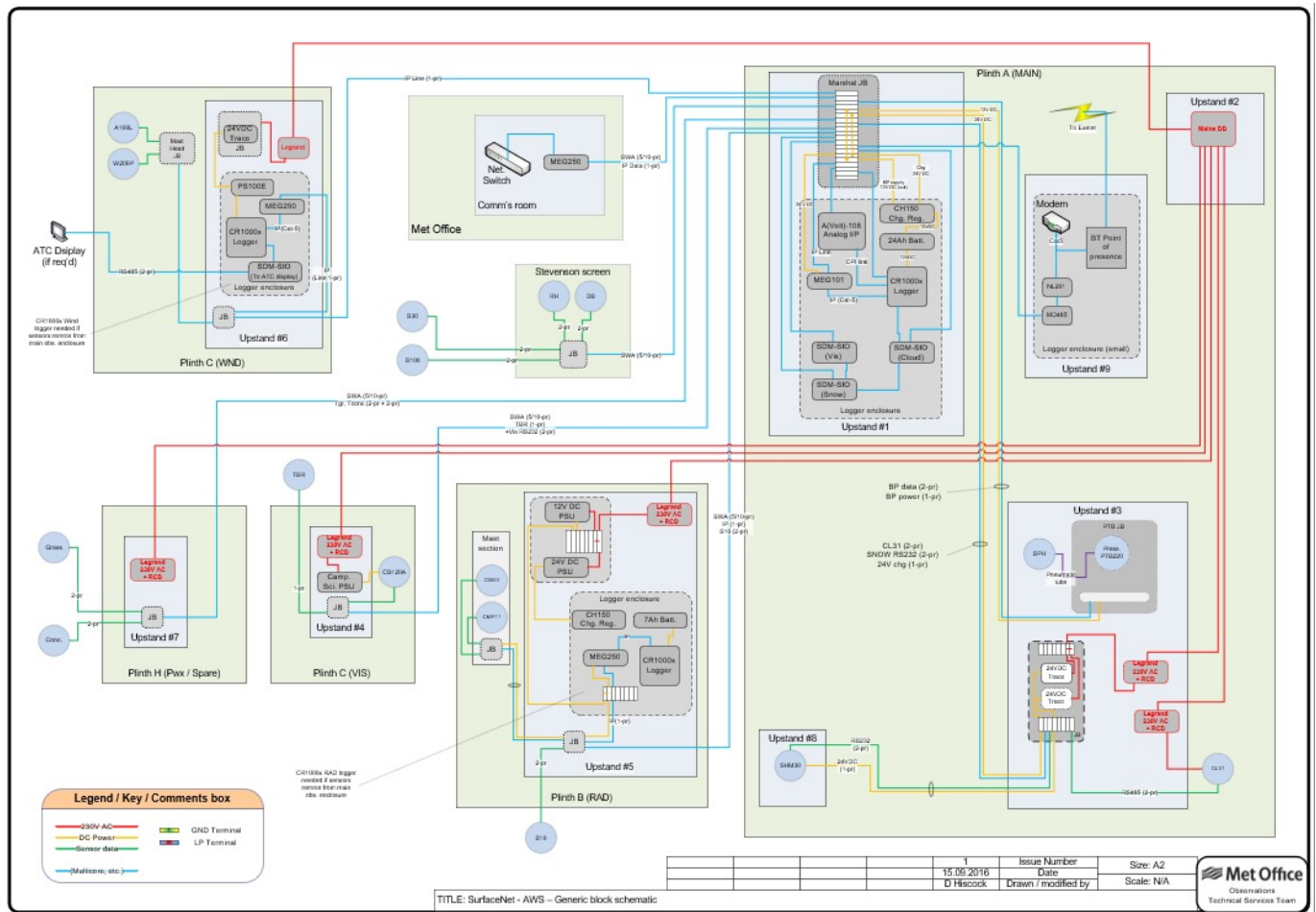


 Met Office
AWS installation steps –
From contractors to instruments



Schematics for engineers

- Templates for standards & consistency
- Support
- Development

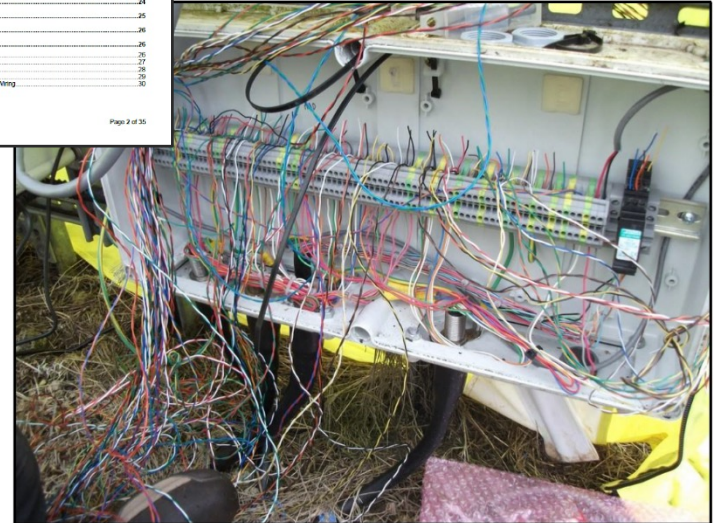
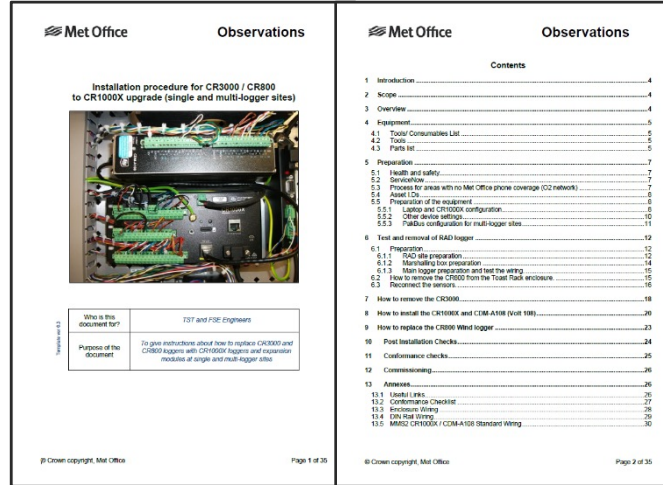


What am I doing?

- Current projects
 - Lifecycle management advisory
 - Resources / logistics
 - Technical / practical aspects
 - Upgrading Surface observing network – logger replacements at ~320 sites
 - Writing instructions for procedures
 - Early life support
 - Baseline Surface Radiation Network (BSRN) repair & refurbishments
 - Volcanic Ash (VA) observing network – Mid-life upgrade
 - Mode-S – Aircraft observation equipment
 - GNSS – Planning for installation of equipment installation at 30 sites
 - Radiosonde network
 - AWS infrastructure

Current projects

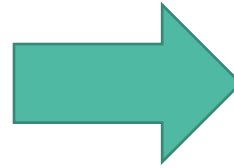
- Upgrading Surface observing network – logger replacements at ~320 sites
 - Writing instructions for procedures
 - Early life support



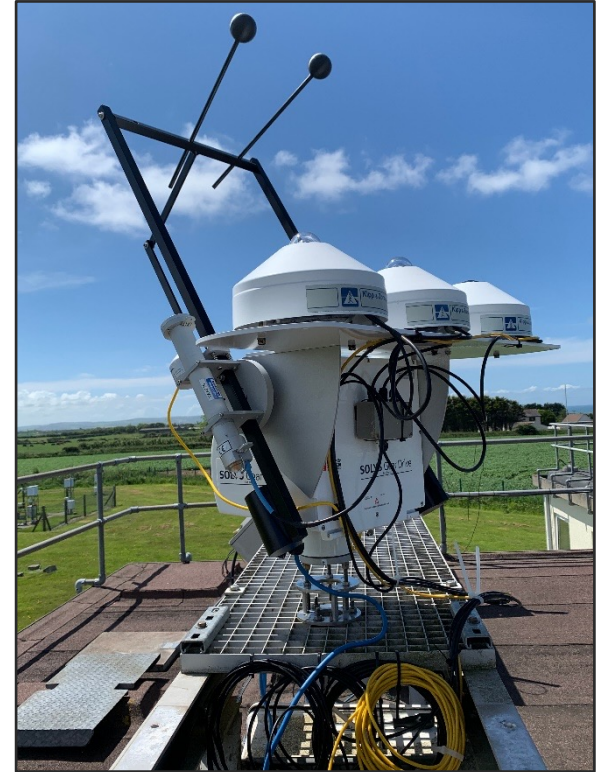
BSRN repair & refurbishments



Tracker
upgrade



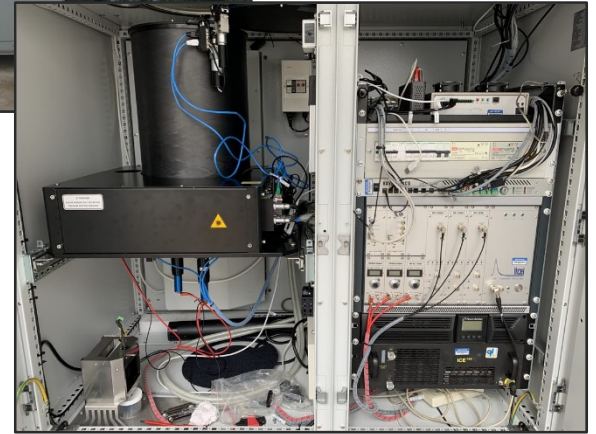
More
work to
complete



Volcanic Ash (VA) observing network

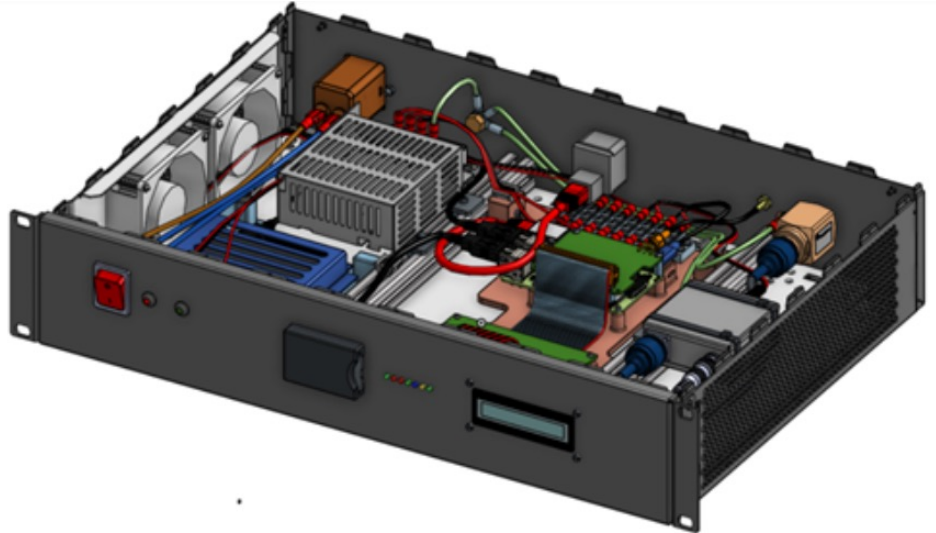
Mid-life upgrade

- Civil Aviation Authority (CAA) funded
- Implemented after Icelandic volcano disrupted air traffic
- Powerful Lidar
- Sun photometer



Mode-S

- Aircraft Automatic Dependent Surveillance–Broadcast (ADS-B) observation equipment
 - Temperature
 - Humidity
- Contributes to Numerical Weather Prediction (NWP) model
- Installed at Radar sites



Global Navigation Satellite System (GNSS)

- GPS Water Vapour column
- Planning for installation of equipment installation at 30 sites
 - Comms preparation
 - Electrical works
 - Concrete plinths
 - Integration around existing equipment / sensors
- Needs a very stable base
- Needs to avoid nearby obstructions to prevent multipath reflections



Lifecycle management advisory

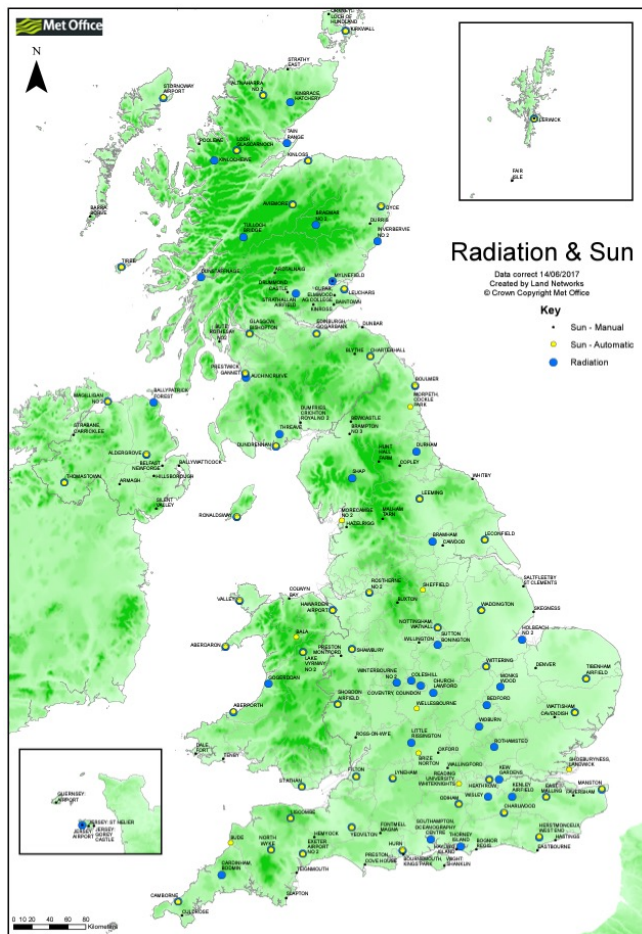
- AWS infrastructure
 - Resilience and risk reduction
 - Ageing cables
 - More standardisation
- Radiosonde network
 - Network review
 - Hydrogen / Helium decisions
 - End of life Autosondes

Why am I here

- Nobody else could (would?) come
 - Not because of any experience with radiation measurement
 - An engineer with some experience of nuts, bolts & cables
- BSRN issue
 - Loss of expert / network manager
- It was time – missed year, no other intercomparisons
- To meet
- To learn

Background

- 2x BSRN stations
 - Lerwick in far north
 - Camborne in far south west
- Network of 85 sites with Radiation sensors
 - CMP11
 - CDS3



Pyranometer and Sunshine sensor calibration

- Dedicated calibration lab
- April – October



Next steps

- Report back to our calibration lab
- Develop better resilience team for BSRN responsibility
- Improve the AHF mounting system
- Add a mount for pyrhelimeter(s)
- Bring pyranometers
- Wait for IPC-XIII report – 2022?
 - To confirm calibration factors
- Plan for next IPC

Final thoughts

- It has been an honour and pleasure
- Meeting of colleagues from around the world – practicing my languages
- Meeting my WMO Secretariat contact (Isabelle Ruedi)
- Lessons learnt
 - Equipment refinements
 - Data processing – need to invest time in Python
 - Calibration processes – Chain of uncertainties
 - Stellar and lunar measurements – AOD – Extra value from our VA Network?
 - Issues with links to SI
 - Surgical Operation on AHF by José



Thank you for your time

- Questions
- Comments