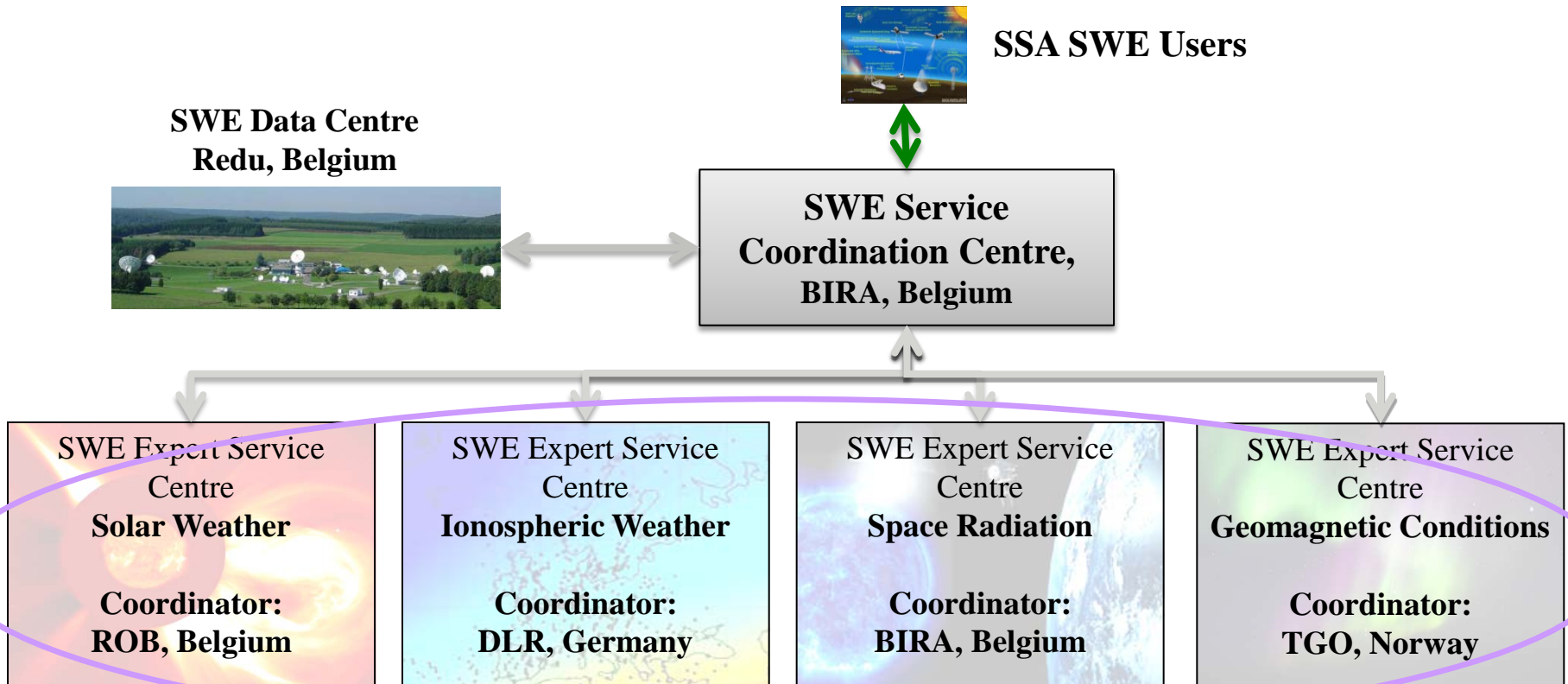# Combining Space Weather Services and Expertise:

What constitutes an Expert Service Centre?

A Glover[1,2], JP Luntama[1]

1: SSA Programme Office, ESA/ESAC, Madrid, Spain

2: Rhea System, Belgium

SSA SWE Users

**SWE Data Centre
Redu, Belgium**

**SWE Service
Coordination Centre,
BIRA, Belgium**

SWE Expert Service
Centre
Solar Weather

**Coordinator:
ROB, Belgium**

SWE Expert Service
Centre
Ionospheric Weather

**Coordinator:
DLR, Germany**

SWE Expert Service
Centre
Space Radiation

**Coordinator:
BIRA, Belgium**

SWE Expert Service
Centre
Geomagnetic Conditions

**Coordinator:
TGO, Norway**

Expert Service Centres

- Core of the SWE precursor service network

- Distributed centres based on exisiting national expertise

  - Coordinating group

  - (N)*expert groups

- New Expert Groups added to the ESC framework in SSA PP in 2012

- Next phase (2013+):

  - New ESCs are foreseen

  - Network of Expert Groups to expand

  - Scope of tasks further defined

SWE Expert Service Centre
Space Radiation

**Coordinator:
BIRA, Belgium
Expert Groups:
AIT (A)**

SWE Expert Service Centre
Geomagnetic Conditions

**Coordinator:
TGO, Norway**

SWE Expert Service Centre
Solar Weather

**Coordinator:
ROB, Belgium
Expert Groups:
Univ Graz (A)**

SWE Expert Service Centre
Ionospheric Weather

**Coordinator:
DLR, Germany**

New ESCs to come
(Theme ?)

- Scope of SSA PP focused on service demonstration

    - Focus on increasing awareness of existing assets & establishing preliminary network

- Initial network of services established within framework of SN-1

- expanding through SN-IV and SN-VI

- ESCs and Expert Groups provide data and/or precursor services

- Products available online via SWE portal
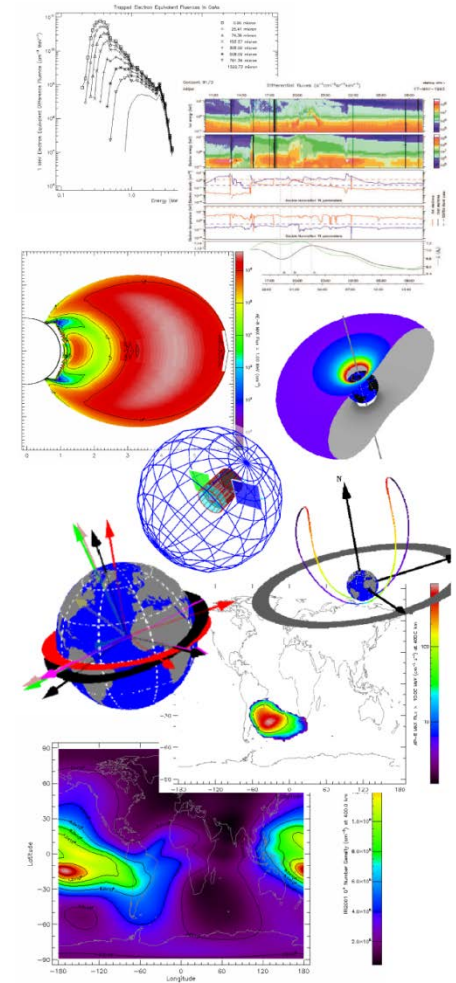
- Provides the first level of user support

- Responsible for ensuring the availability of the SWE assets (data and applications) available via the datacentre

- The SSCC has overall responsibility for ensuring continuity and quality of service provision

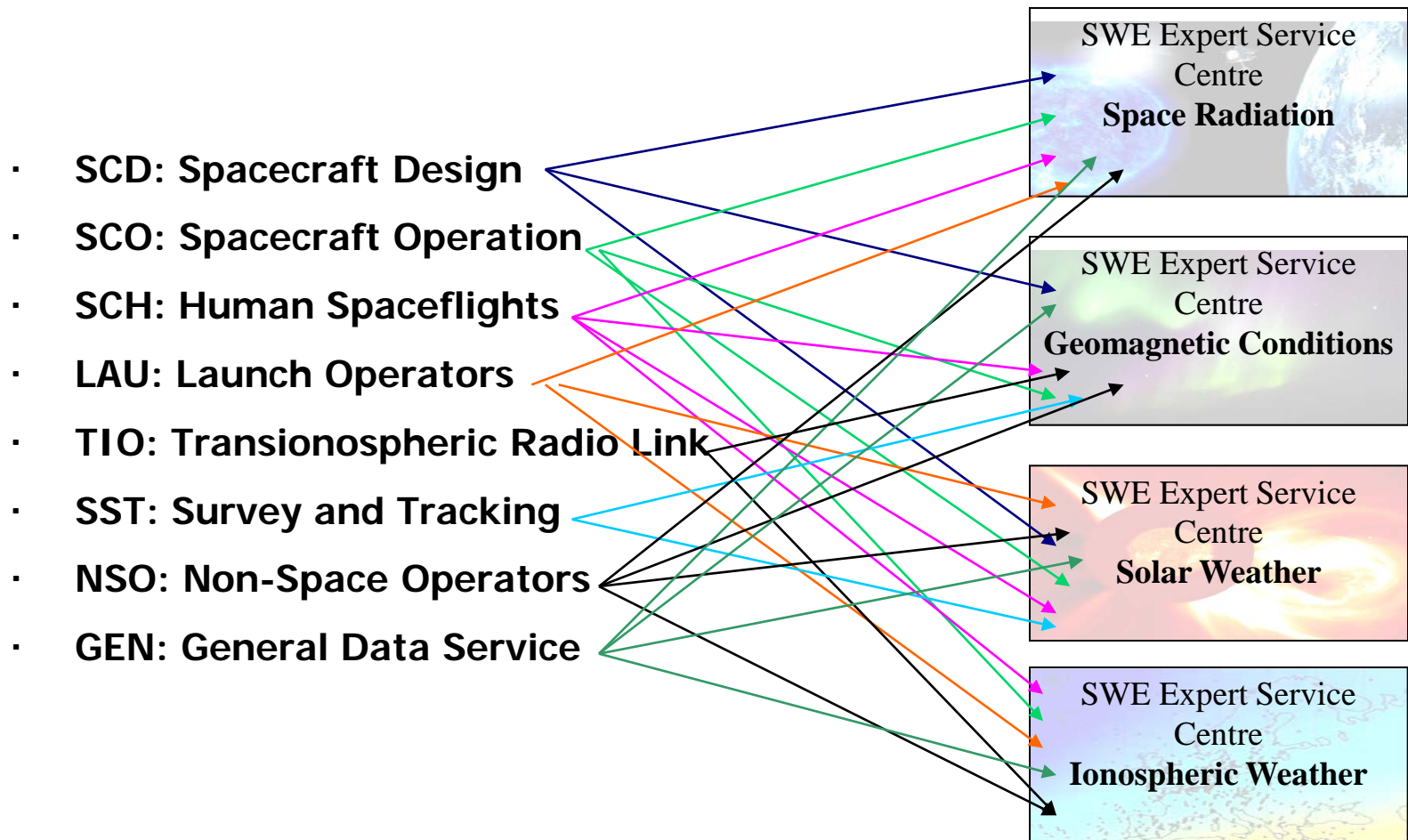- evaluate service performance in pre-operational context.

Expert Service Centres
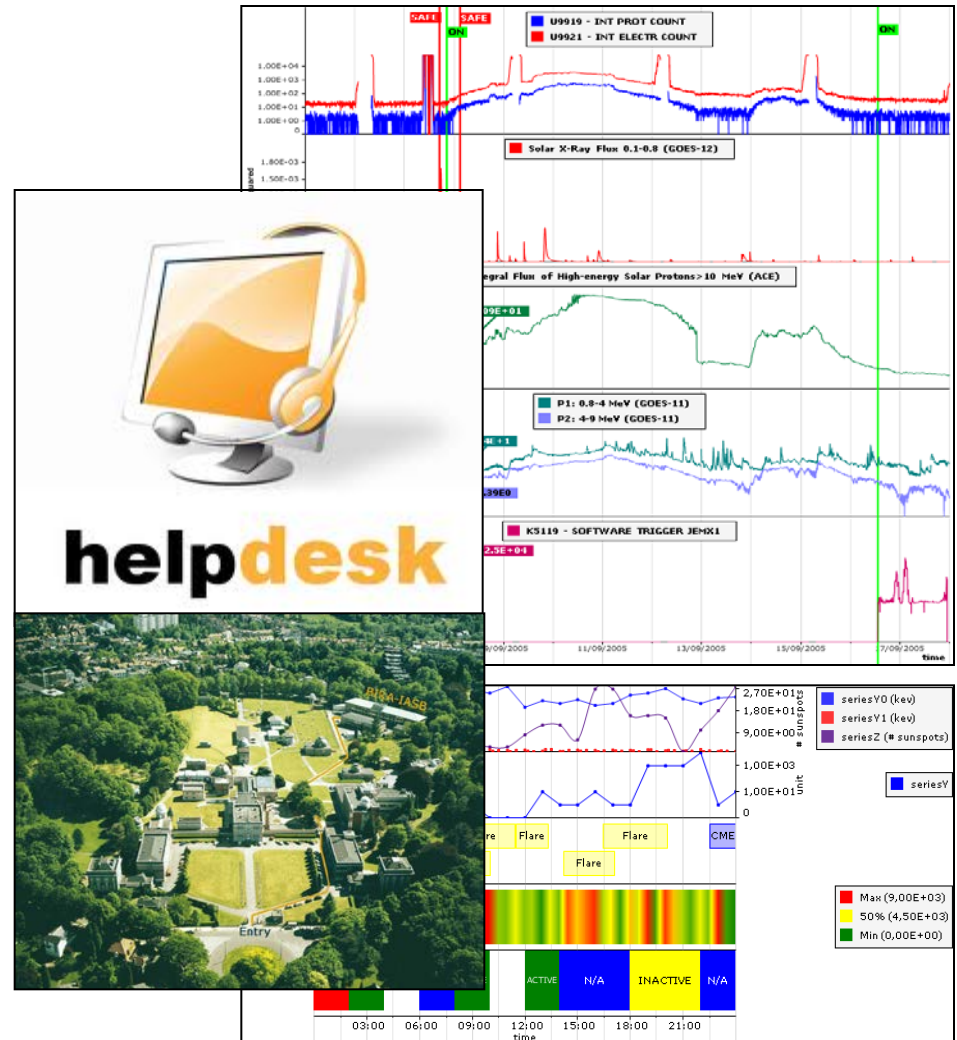
- ESC provides next level of user support

- Scope and responsibilities to be further elaborated during next phase

Next Steps?

- ESC as an entity:

  – How to define ESC profile as SWE thematic centre of expertise?

  – what should be the ESC role in support of individual service providers?

- Extended responsibilities within SWE network:

  – Service metrics?

  – Standardisation: covering procedures, service product and data formats?

  – Evaluation of potential new applications/products

- Supported by necessary SLAs

ESCs and Services

- Overall service portfolio: 37 services compiled from several existing applications/data sources as first step

- Common presentation and formats!

- ESCs will play an important role in ensuring quality of services

  - Single ESC lead per service?
  - Or development of SSCC role in service provision and monitoring?

- **SCD: Spacecraft Design**
- **SCO: Spacecraft Operation**
- **SCH: Human Spaceflights**
- **LAU: Launch Operators**
- **TIO: Transionospheric Radio Link**
- **SST: Survey and Tracking**
- **NSO: Non-Space Operators**
- **GEN: General Data Service**

SWE Expert Service Centre
Space Radiation

SWE Expert Service Centre
Geomagnetic Conditions

SWE Expert Service Centre
Solar Weather

SWE Expert Service Centre
Ionospheric Weather

- **Validation** - process of determining the degree to which software and associated data accurately <u>represent the real world from the perspective of the intended use(s)</u>

- **Verification** - process of determining that software, <u>implementation</u> and associated data <u>perform as expected</u>

- In the context of SSA SWE services, this is the process of assessing the services and that they perform as expected in the conditions in which they are deployed

  - Will extend to the full SWE service network in next phase
  - Not only applications deployed within SWE datacentre – federated services also

- Standard service desk terminology for metrics

  - Service Quality, e.g:
    - Accuracy: ability of service to reproduce SpW phenomena
    - Timeliness: ability of service to do this in a time comaptible with users' needs

  - Service Targets, e.g:
    - Precision: e.g. nowcast accurate to +/- 20% with respect to baseline observation.
    - Availability: 99%
    - Mean time between failures (either due to IT failure or failure in service chain such as data supply)

- Service Targets – role of the SSCC
- Service quality – ESCs could take the lead in analysis and feeding recommendations into service development plan.

Service Development Planning

- Comparing performance against expectations: analysis of V&V results in terms of scientific performance (hits vs misses etc)

- Recommendations for improvement-further development
    - New data
    - Improved models

- Agreement on service and data product standards

- Roadmap review and proposal of updates
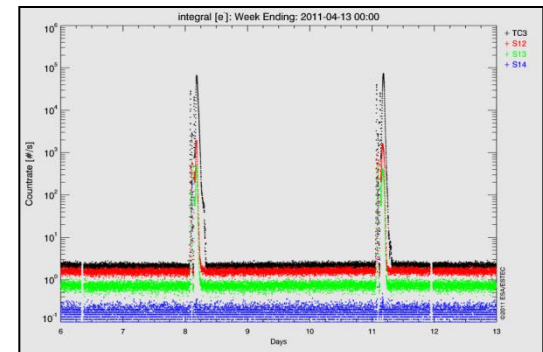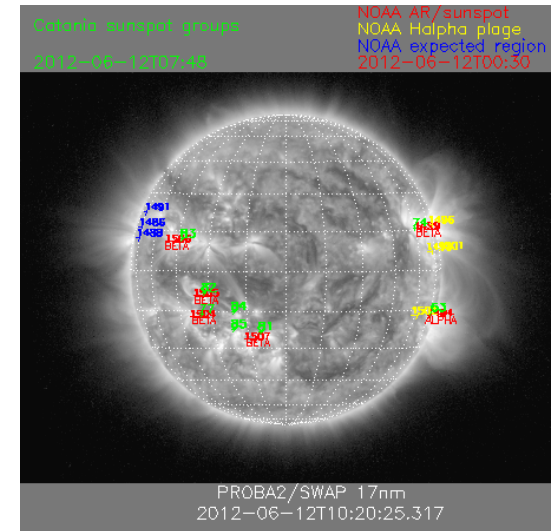
- What would be the ESC role?

- Proposal of new products based on new developments &/or user feedback?

- Coordination of test campaigns for new products?

- Collecting and analysing user feedback

- Reporting on implementation requirements & implications for overall service network?
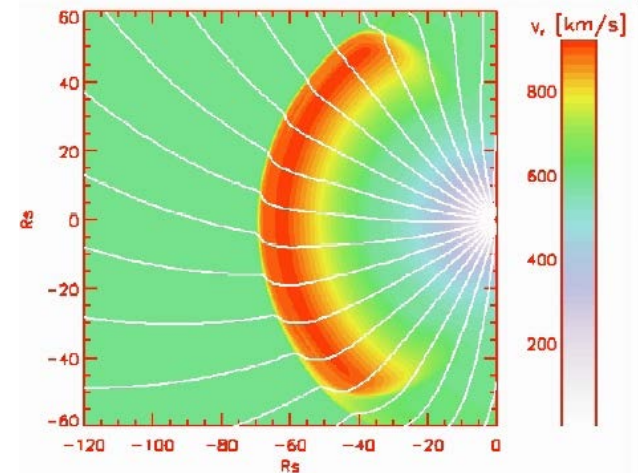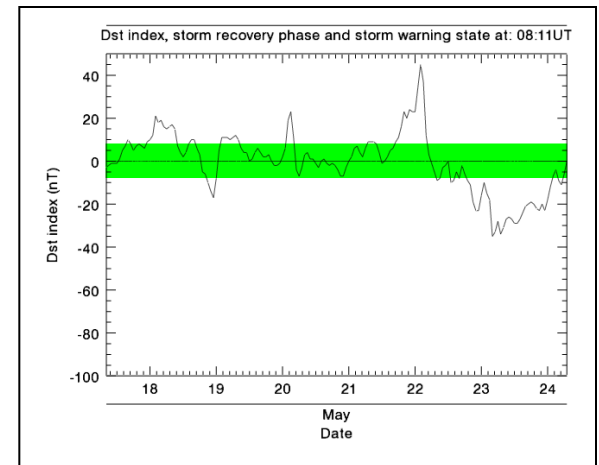
Conclusions, points for discussion

- Next period of SSA expected to start later this year

- scope of ESC network and responsbilities will be enhanced, and necessary SLAs will be established.

- Scope will be defined in coming period, SWWT feedback welcome & encouraged.

- Ultimately aim to ensure that the ESCs provide a solid basis for coordinated reliable services as part of a (pre-) operational network

European Space Agency