A threatened future?
The experience of WDC-SILSO

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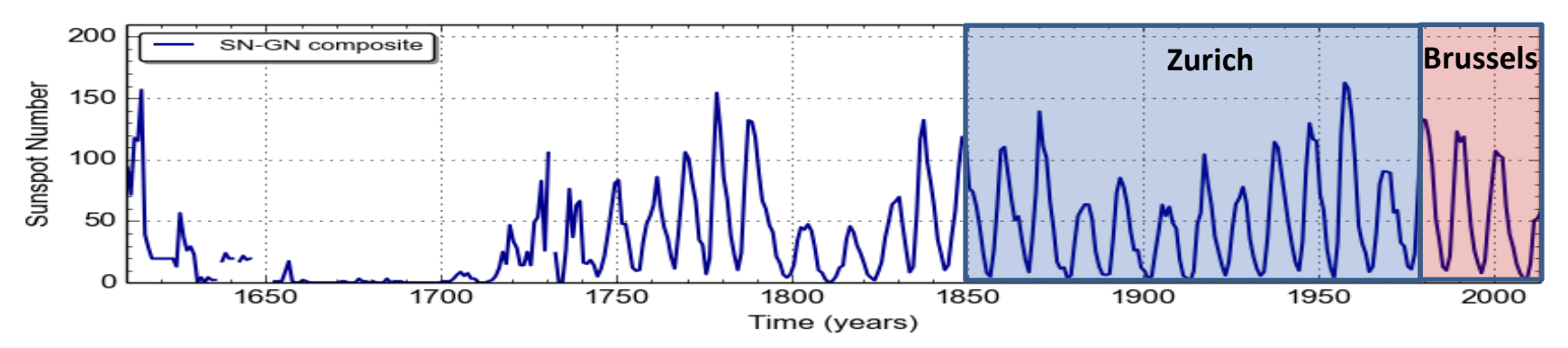
WDC for the Sunspot Number: the origins



- **1849-1980: Observatory of Zürich**
  - Sunspot Number (SN): main activity of the Observatory
  - Led by successive Directors: Wolf, Wolfer, Brunner, Waldmeier
  - ~ 3 assistants (observers, calculators, scientists)
  - 1980: closing of the Observatory (managed by the ETH Zürich)
- Since 1981: WDC moved to Brussels *(Solar Physics Dept., Royal Observatory of Belgium)*
  - Uccle Solar Station (USET): long-term prime contributor to Zurich
- Supervision by IAU, URSI, IUGG

Initial resources (1981-2002):
- 2 scientists
- 1 dedicated programmer
- 1 assistant secretary

100% stable permanent staff

No funding by the scientific unions

A drastic growth of tasks (2011-2016)

Growing scientific demand from the scientific community:

- Progresses in solar-cycle research, Earth climate (global change)
- 2011-2016: full recalibration of the base SN series

- **New extended role and missions for WDC - SILSO**

Entire past series

- SN series distribution

- Full SN series subject to revision
- Building up observation database
- Documentation of externally-produced series and corrections
- **Coordination of a joint validation process (IAU)**:
  - Working groups
  - Workshop organization
  - Central repository (source codes, data sets, methods)
  - Implementation of new standard corrections

Series extension (monthly)

- Network management
- Data verification
- Calculation of new Sunspot Number values

- **New improved calculation method**
- Determination of **uncertainties**
- Group Number production

The means: a declining trend

- **Stagnating or declining base institutional manpower**:
  - **Vacant permanent positions**:
    - Retiring or leaving staff not replaced
    - Delayed replacements by contractuals
    - *Loss of one scientific position (R. Van der Linden, Director of the ROB)*
    - *Loss of one programmer (not replaced)*
  - **Permanent positions dedicated to other objectives**:
    - Management of solar space projects, short-term space weather
- **Search for external funding**:
  - 14 projects submitted over last 3 years (EU FP7, Belgian Science Policy, AXA research grants, bilateral government grants, etc.):

⇨ **Very limited outcome**

- **Objectives do not match long-term data services**

⇨ Low success rate (< 10%)

⇨ Secondary participation:
no full-time salary, limited duration

- **Output unrelated to the product**
  - Exploitation of the series as inp

Current SILSO manpower:
1 scientist (-1)
1 post-doc (projects)
1 operator (Web, databases)
~~0 programmer~~ (-1)

No backup for running base operations.
Continuity of service cannot be guaranteed !

Primary needs and constraints

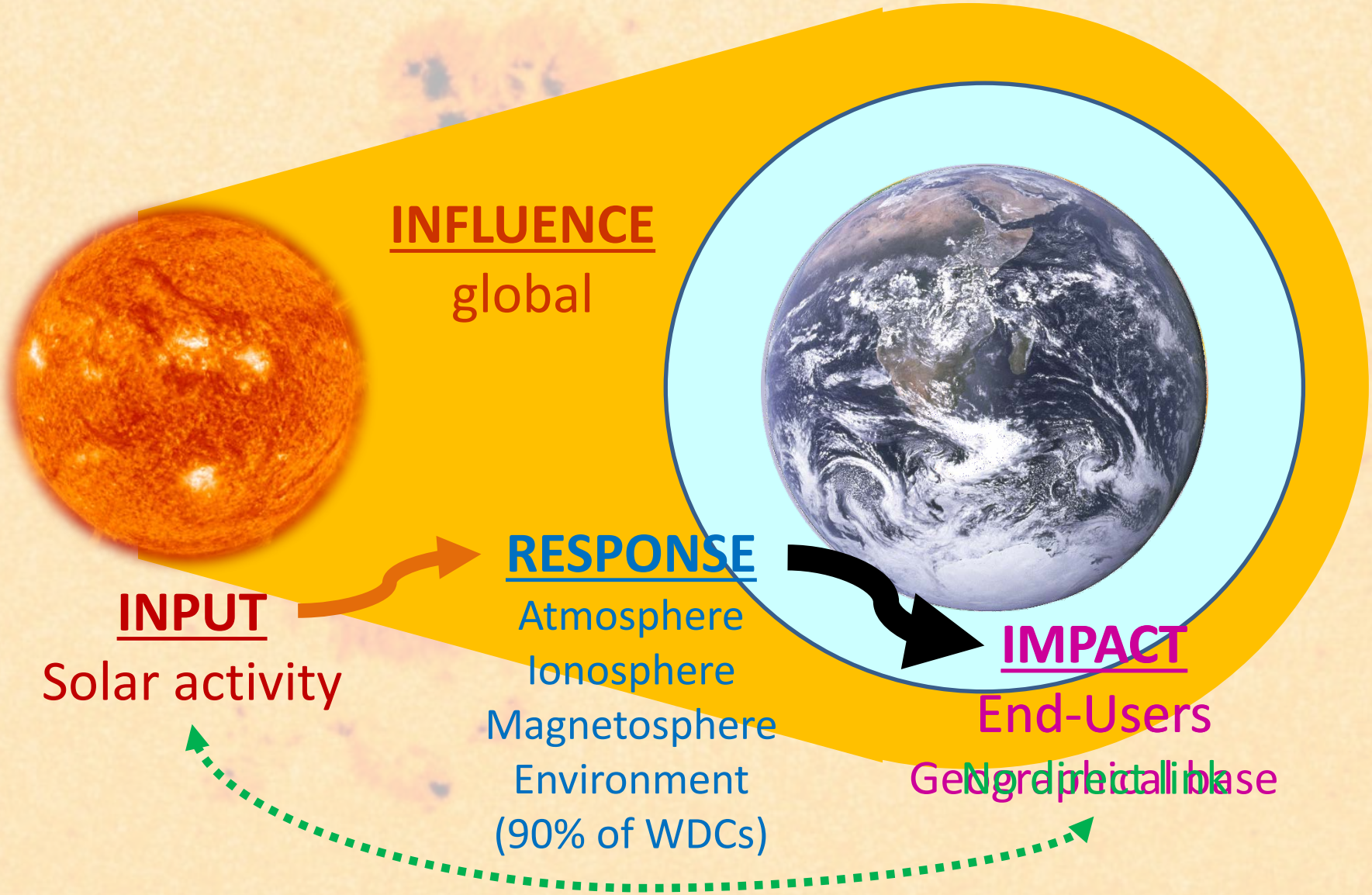
- **Needs:**
  - **Continuity and reliability** of the service
  - Preservation of the scientific and data **know-how**
  - Capability to upgrade data to **follow scientific progresses**

  ⇨ **Long-term and structural stability**
- **Constraints**:
  - Open data policy for primary data
  - No funding by supervising unions (ICSU, IAU,IUGG,URSI)

  ⇨ **Primary resources come only from the hosting institute**
- **Specificity of solar data services**:
  - No direct access to end-users (scientific and non-scientific)

  ⇨ **No data "market" !**

From the Sun to users: no direct link



Alternate business plans?

- A different model than in geosciences and life sciences :
  - Few users: other data centers and research teams (small "market")
  - Small range of value-added products (paying services)

  ⇨ No potential for significant income from data products
  - No multiple equivalent research centers
  - No large expert base

  ⇨ Limited potential for synergies and task sharing
- The assets:
  - **Solar input indispensable** for
    - Wide range of scientific applications (research)
    - Multiple impacts on citizens (services)

    ☀ **Mechanism for reassigning a "royalty fee" from final-service incomes?**
  - **No big requirements**: small-size budget and team

☀ **Global structural funding through scientific unions ? (primary benefiters)**

Questions or suggestions ?

Poster # 61

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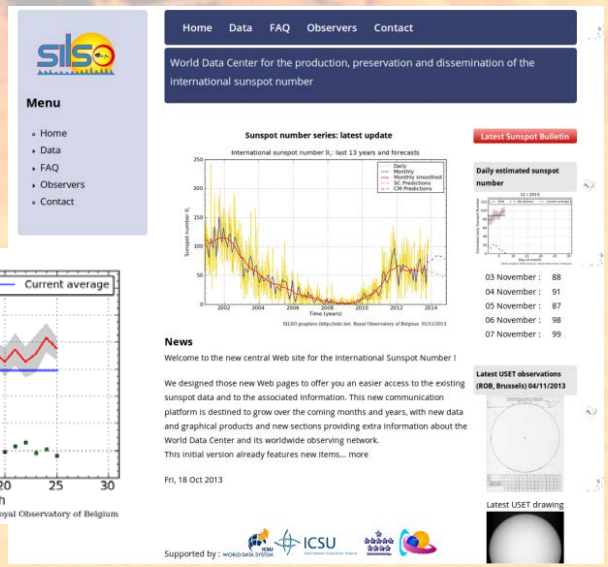
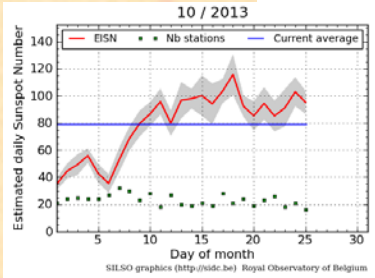
Sunspot Index and Long-term Solar Observations





http://sidc.be/silso