Session 4: Automation and Autonomous Station Operations

Jan McGarry, Chris Moore,

Georg Kirchner, Pierre Lauber (co-chairs)

Points of Discussion

- What is the current experience with automated and autonomous operated stations?

- Who is doing what? What can we expect to do?

- What is holding us back from more implementation?

- Is there a common theme that might work as guidance for groups just starting to contemplate automation and not yet engaged?

- Can we automate safety issues and systems integrity issues (weather, etc)?

- Can we automate diagnostics and testing procedures (maybe avoid some safety issues)

- What is the experience with centralized control of a network of stations?

- Are there hardware items and software tools that we should be aware of?

- What software is available for smart scheduling of the network?

POSTERS

- Satellite laser ranging station "Lviv-1831" in Lviv, Ukraine. Status report. (Y. Blagodyr)

- Scheduling the NASA SGSLR Network (combined with Session 3). (J. Horvath)

- Several from Chris Moore

Alexander Neidhardt

Applied Computer Science for GGOS
Observatories

Automation Sub-Sessions

- Intro & current state of ILRS

- What is planned for next 5 years?

- Bringing automation to more ILRS stations

- Future of automation in the ILRS and issues related to automation

All presentations are 15 minutes (includes 2 minutes for questions) unless talk has * next to it (then it is only 10 minutes).

Automation Sub-Session #1

- Intro & current state of ILRS (09:00 to 10:35)
  - What is the current experience with automated and autonomous operated stations?
  - Who is doing what now (auto processing, auto scheduling, auto tracking, and others)?

- ➤ Automatic scheduling of satellite passages at the SOS-W (Riepl)
- ➤ German Aerospace Center (Hampf)
- ➤ Potsdam automation (Bauer)
- ➤ The new Korean SLR system and its automatic operation (Lim)
- ➤ Automated operations in Changchun station: current (Liang)*
- ➤ Mt Stromlo experience gained with automation: current (Moore)*

DISCUSSION (15 minutes)
BREAK (10:35 to 11:00)

* 10 minute talk

Automation Sub-Session #2

- What is planned for next 5 years? (11:00 to 12:00)
  - What are plans for the current and new stations?

  - Mt Stromlo automation in progress: plans (Moore)*
  - Automated operations in Changchun station: plans (Liang)*
  - Plans for a fully automated SGSLR system: part I (McGarry)*
  - SGSLR acquisition and tracking automation (Hoffman)

  DISCUSSION (15 minutes)

  LUNCH (12:00 to 13:00)

* 10 minute talk

Automation Sub-Session #3

- Bringing automation to more ILRS stations (13:00 to 14:15)
  - What is holding us back from more implementation?
  - What can we expect to do in the near future?
  - Is there a common theme that might work as guidance for groups just starting to contemplate automation and not yet engaged?
  - Are there hardware & software tools that the ILRS should be aware of?
  - What software is available for smart scheduling of the network?
  - Is automation for everyone?

- ➢ Toward optimal automated operations using situational awareness from multi-sensor data (Varghese)
- ➢ When Does Automation Make Sense? (Ricklefs)
- ➢ Scheduling for the future NASA SGSLR Network (Horvath)

DISCUSSION (30 minutes)
BREAK (14:15 to 14:45)

Automation Sub-Session #4

- Future of automation in the ILRS and issues related to automation (14:45 to 15:45)
  - Can we automate safety and systems integrity issues (weather, etc)?
  - Can we automate diagnostics and testing procedures?
  - What is the experience with centralized control of a network of stations?

  - ➢ Plans for a fully automated SGSLR system: part II (McGarry)
  - ➢ Safety/Security Concerns when Automating SLR Systems (Donovan/Wetzel)

DISCUSSION (30 minutes)

END OF AUTOMATION SESSION