

13th AGILE Workshop
Roma, 25th and 26th of May 2015



SPACE SYSTEMS

***The AGILE mission development and operations:
lesson learnt after 8 years in orbit***
Paolo Sabatini – Heads of Projects

Content

- AGILE industrial team
- AGILE development
- AGILE key performances
- Lesson learnt



AGILE industrial team

RTI AGILE
Mission & System
Launch service
Integration & test
Operations



Full Italian development
Large involvement of Small and Medium Enterprises

- ➡ Contractual Interface with ASI for the implementation phase (including launch services & operations)
- ➡ Mission system engineering and coordinator of the industrial team
- ➡ Design, development & integration of the satellite platform
- ➡ Integration, test and launch of the complete system, including the environmental test, functional test and launch campaign
- ➡ In orbit maintenance of the system and coordinator of the command and control operations of the satellite



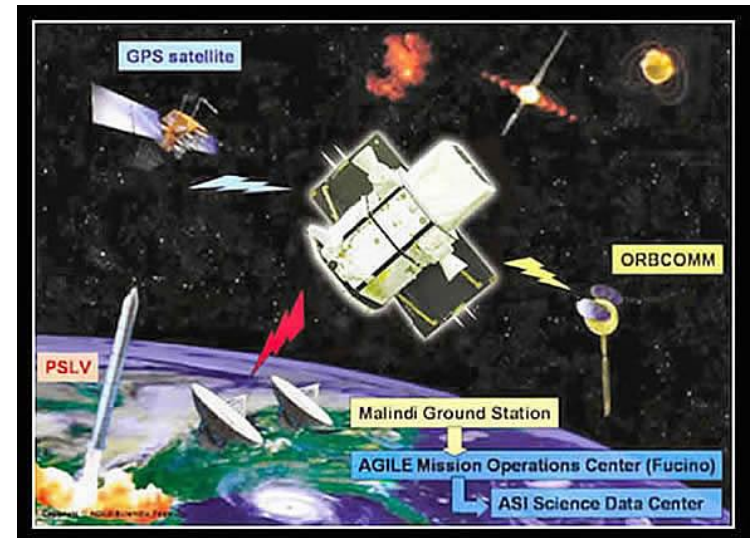
The AGILE development

- ➡ Contract signature with ASI for the C/D phase of the mission in the year 2003
- ➡ Satellite launched on 23/4/2007
- ➡ Contribution of the Italian Scientific Institutes as part of the overall contract for the delivery of the instruments FMs.
- ➡ Contract based on the in-orbit delivery of the satellite
- ➡ Contractual lifetime: 2 years (!)



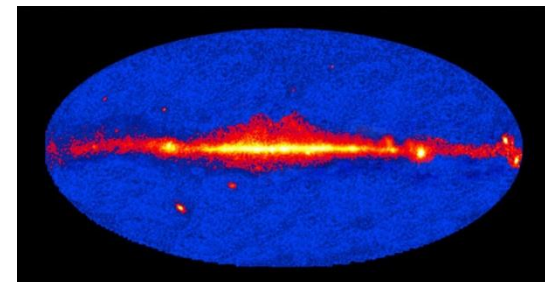
System characteristics

- ➡ Orbit: LEO, equatorial, 550km BoL
- ➡ Mass at launch: 350 kg
- ➡ Satellite dimensions: 1,7 x 2 x 0,8 m³
- ➡ Electrical Power: 200 W (average)
- ➡ Sun pointing, fixed solar panel
- ➡ Attitude knowledge: 1 arcmin
- ➡ On board autonomy of 3 days without contacts
- ➡ Gamma Ray Burst alert channel
- ➡ Ground Station in Malindi -> satellite visibility every orbit
- ➡ Quick scientific processing time

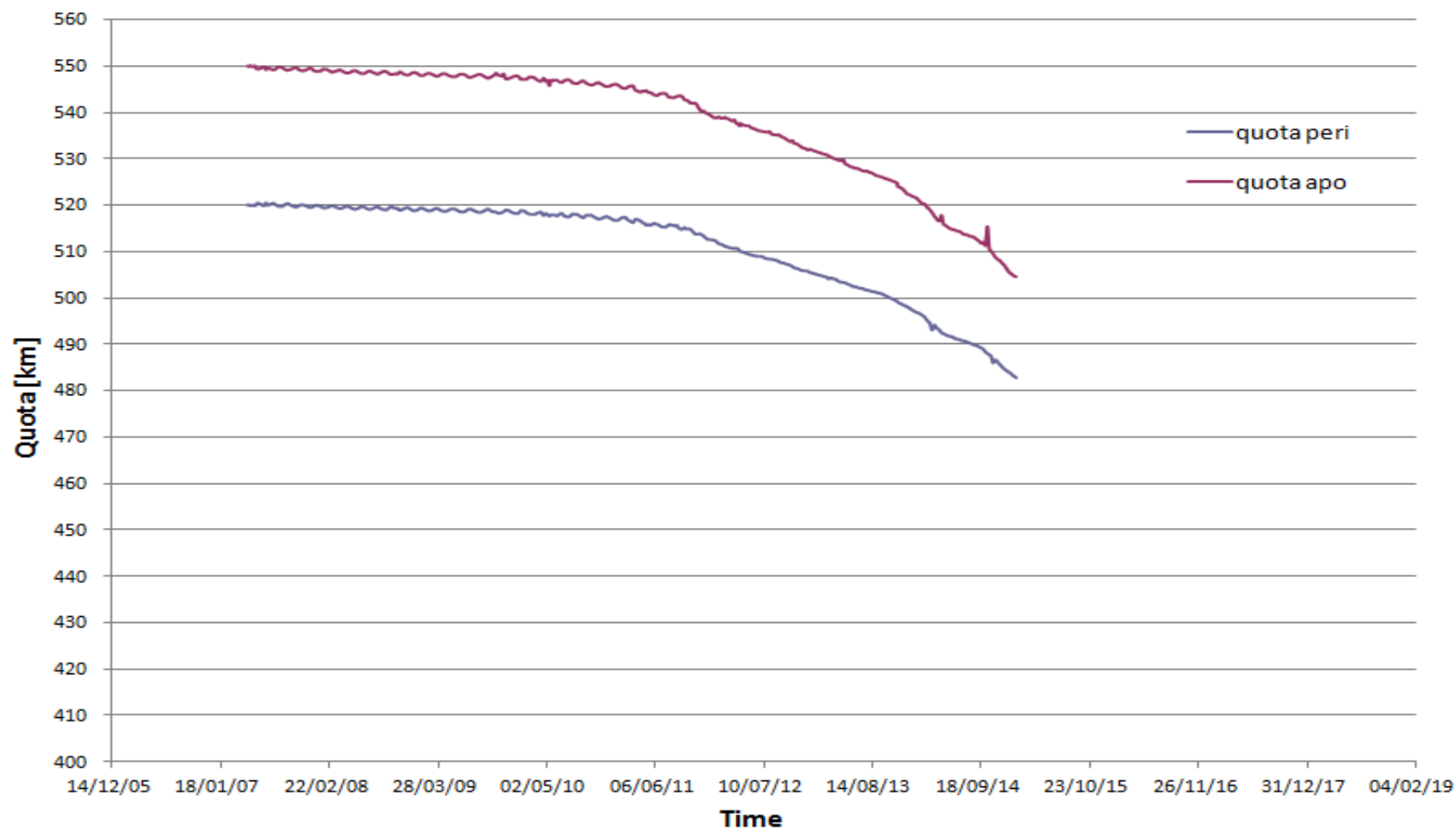


AGILE mission status

- ➡ Up to now, AGILE has performed more than 41.700 passages over the Malindi station
- ➡ In the 8+ years of mission AGILE has delivered scientific data for more than 97% of the available mission time.
- ➡ The platform redundancies are still available so the system is still able to react to anomalies
- ➡ The natural orbit decay and the behaviour of the satellite on-board systems show that the satellite can remain operative for at least another 1-2 years.

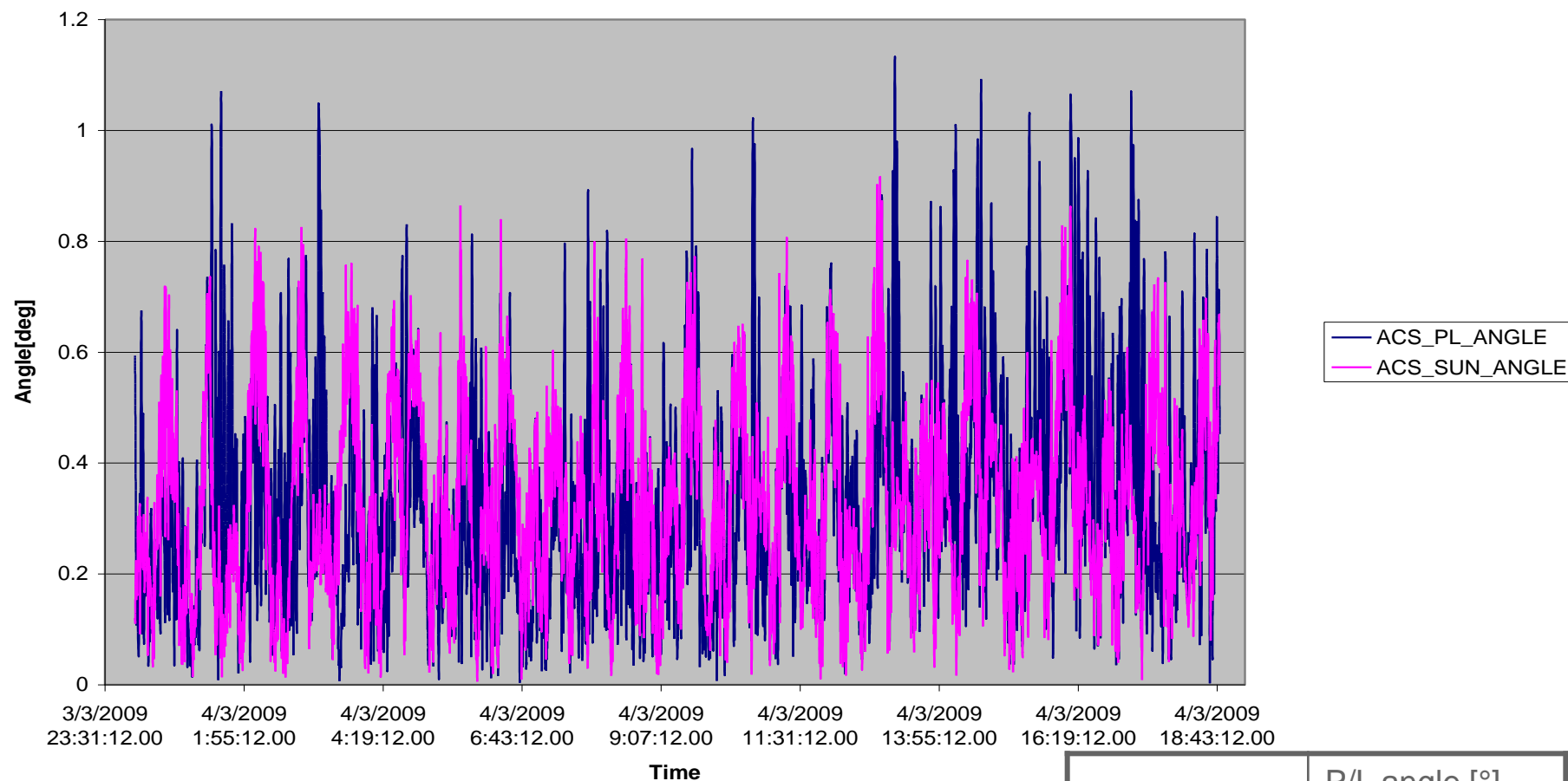


Apo&Peri



Fine sun pointing mode

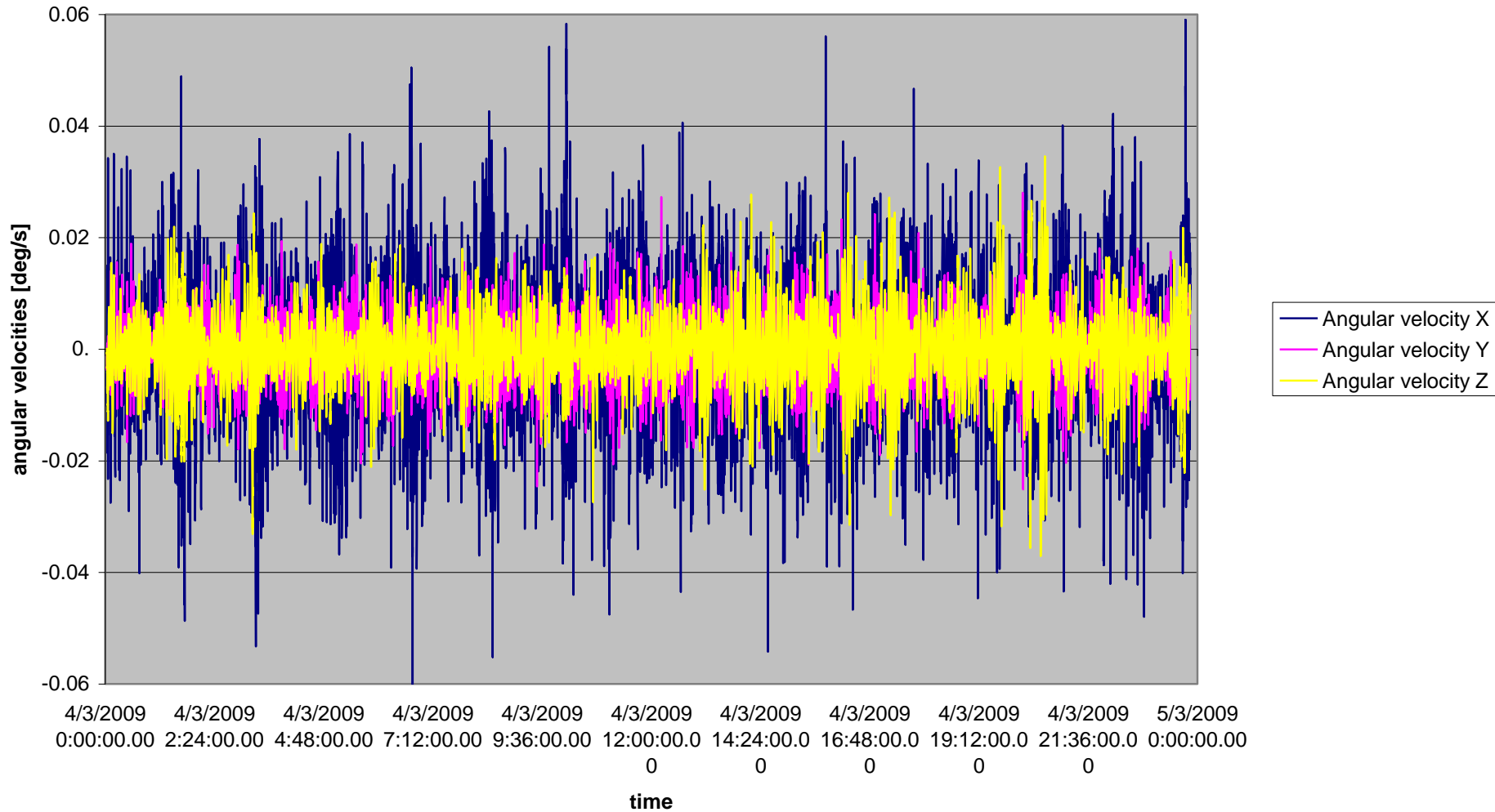
Sun Angle and Payload Angle



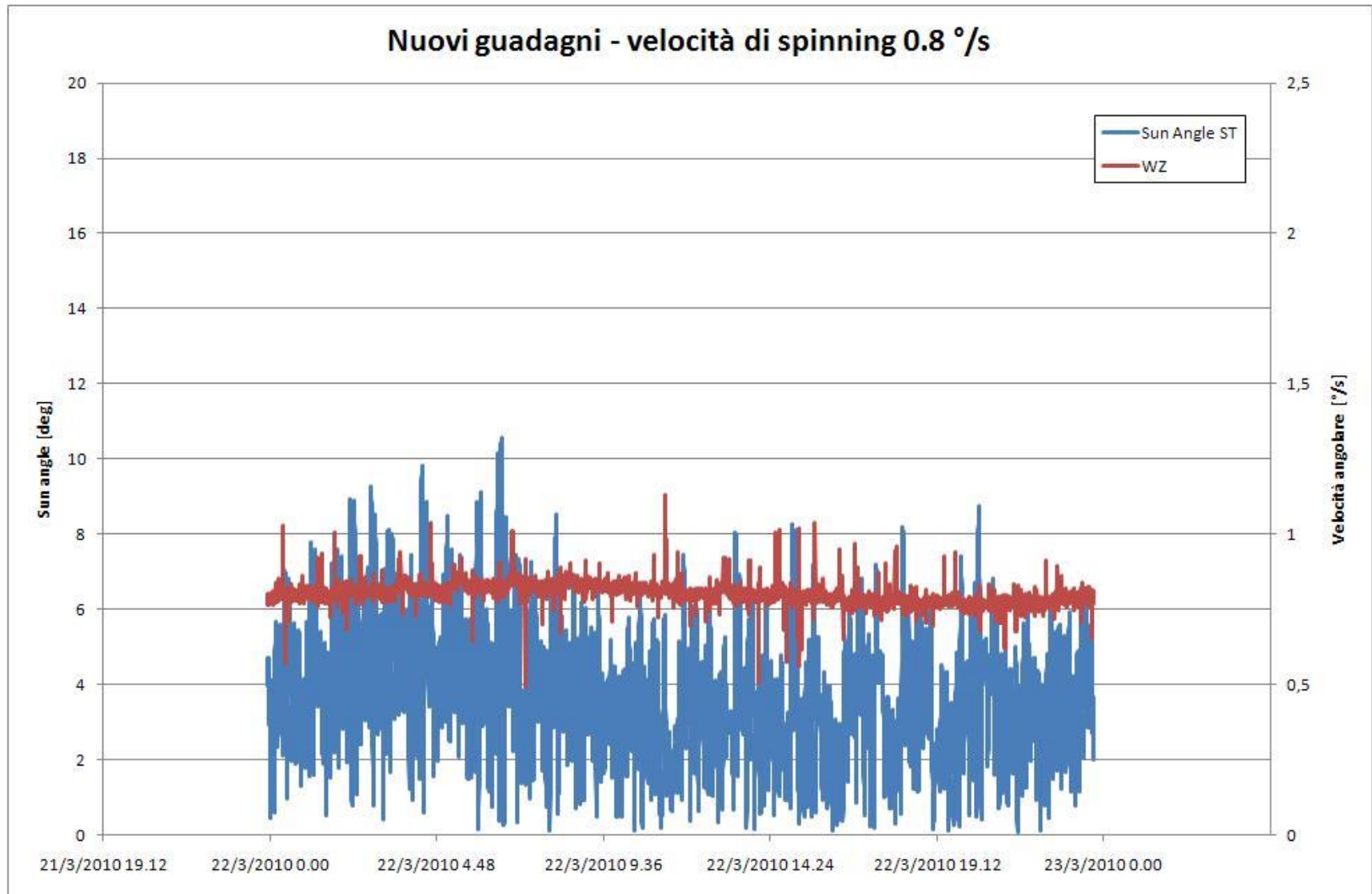
	P/L angle [°]
Media	0.32
Dev.Standard	0.2

Fine sun pointing mode

Angular velocities body frame



Spinning mode



Conclusion - lesson learnt

- ➡ The AGILE mission is considered a big success for ASI and the Scientific Community
- ➡ AGILE demonstrated the full feasibility of a scientific mission with limited budget (50 M€ including launch) and short development time.
- ➡ ESA has issued for the first time in 2012 the “Call for a Small Mission opportunity in ESA’s Science Programme ” where the CHEOPS mission has been selected. This shows the growing interest of the European community to this kind of mission
- ➡ The key factor of the AGILE success was the strong and proactive cooperation among all the involved actors (Agency, Industry, Scientific teams)
- ➡ The AGILE project has created many groups of specialists in different disciplines that represent a key asset for future missions
- ➡ The success of VEGA facilitate the access to space for small missions



Thank you for your attention!

Paolo SABATINI

Head of Projects

CGS S.p.A. Compagnia Generale per lo Spazio
Via Gallarate, 150 – 20151 Milano (Italy)

Internet: <http://www.cgspace.it>

E-mail: psabatini@cgspace.it

Tel.: +39 0238048.239

Fax: +39 02 3086458

