



**ESTEC, 17-19 June 2009**

**ARRISS School Contact**

**1<sup>th</sup> Direct / Telebridge**

**"Alessandro Volta" School,  
Mandello del Lario, Lecco, ITALY**

**I2JRY to IZ2PBM to I2JRY**

**Francesco De Paolis**  
**ARRISS Europe - Mentor**  
**AMSAT Italia - National Secretary**  
**IKØWGF**



## 1<sup>th</sup> Direct / Telebridge ARISS school contact

Friday, 27 March 2009 at 14:05 UTC, "Alessandro Volta" School at "Mandello del Lario", Italy, established a telebridge and direct contact with US astronaut Mike Fincke KE5AIT on board the International Space Station.



Mike Fincke on ISS operating ARISS Station.

"Alessandro Volta" student during the ARISS contact.

In the picture also Giampietro IZ2GOJ, radio contact coordinator at Mandello.



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Assistance was provided by Amateur Radio school station in ISIS "Andrea Ponti", Gallarate, Italy.

The "Alessandro Volta" School operated the contact with callsign IZ2PBM and ISIS "Andrea Ponti" Gallarate operated the contact with callsign IZJRY.

...Images stations...



# 1<sup>th</sup> Direct / Telebridge ARISS school contact

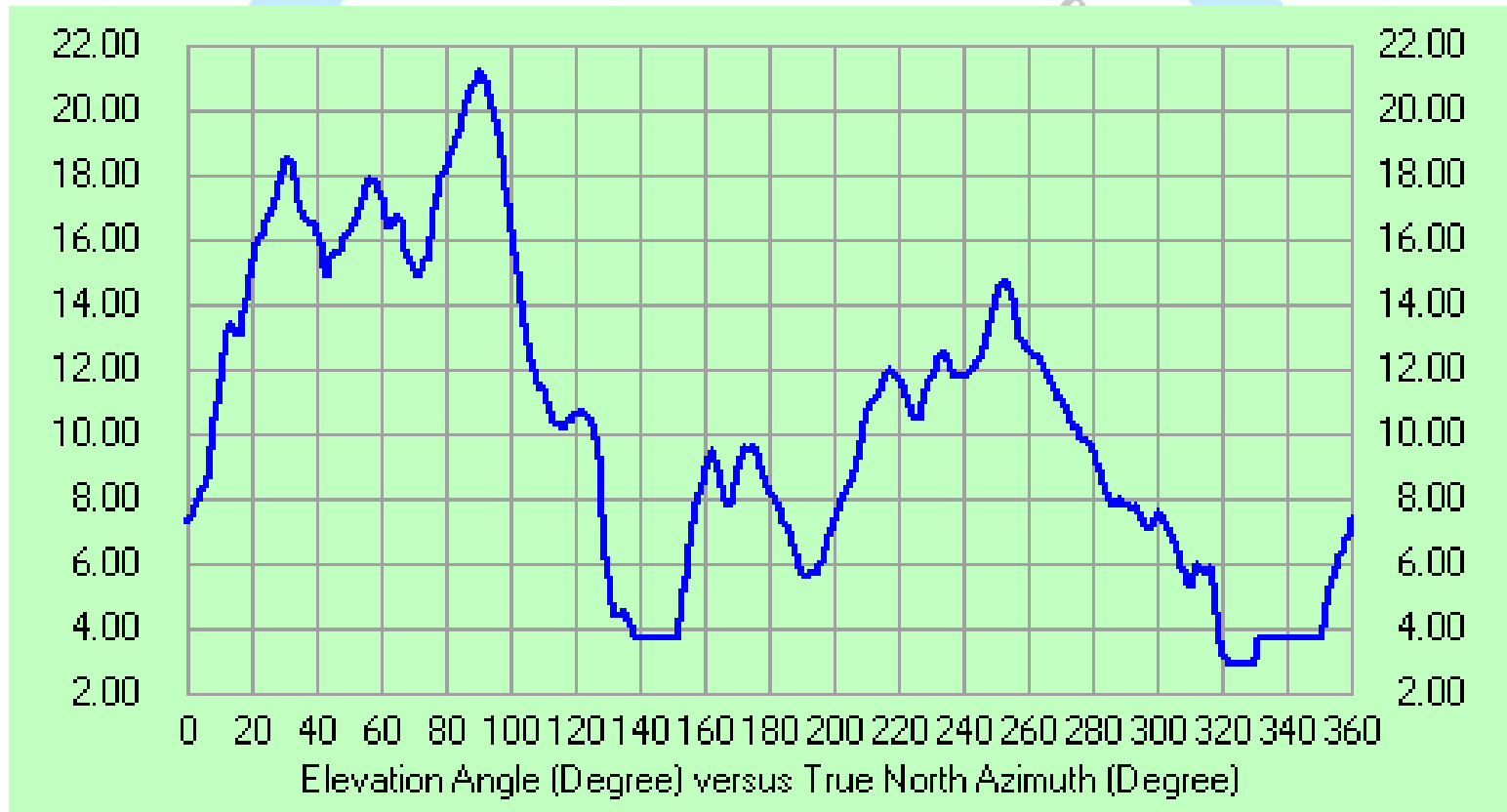
This contact was a combination of direct and telebridge due to local antenna obscuration. Around the city of Mandello del Lario there are high mountains (2.400 of altitude) at short-distance.



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Local antenna obscuration is present in large part of the horizon.

Profile of the mountains around Mandello



**Question: Short-Direct or Telebridge ?**

**Answer: "Hybrid" contact (direct+telebridge) !**



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Previous experience ...

Eneide Mission, April 15th – 25th, 2005

April 18th, 2005 at 08:46 UTC, ESA astronaut Roberto Vittori had an excellent ARISS contact with two Italian schools.

This is the 1th direct contact with the ISS by two schools involved in the uplink and downlink simultaneously. Questions of students from each school alternately by amateur radio station at schools. Synchronization of activities and sharing by VoIP Conference.



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Previous experience ...

Esperia Mission, October 23<sup>th</sup> – November 7<sup>th</sup>, 2007

October 29<sup>th</sup> 2007 at 08:23 UTC, two Italian schools established a radio contact with ESA astronaut Paolo Nespoli, IZ0JPA, onboard the ISS.

A second contact between the schools and Nespoli took place during the following pass, at 09:59 UTC. There are the 2<sup>th</sup> and 3<sup>th</sup> direct contacts with the ISS by two schools involved in the uplink and downlink simultaneously. Synchronization of activities and sharing by Phone-Patch Conference.



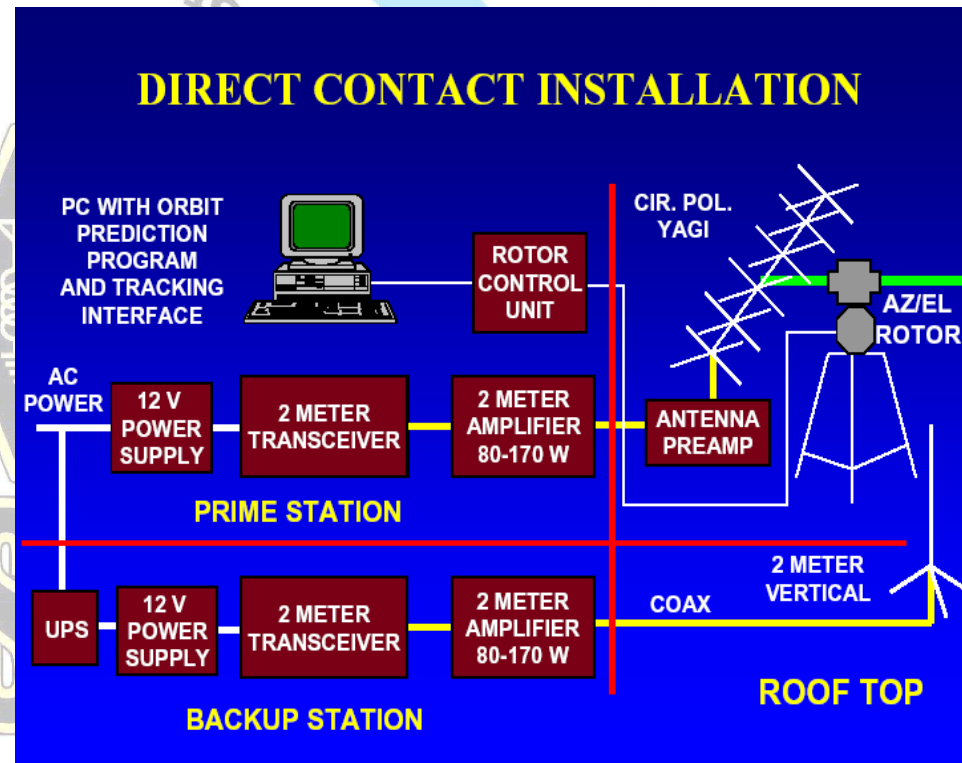
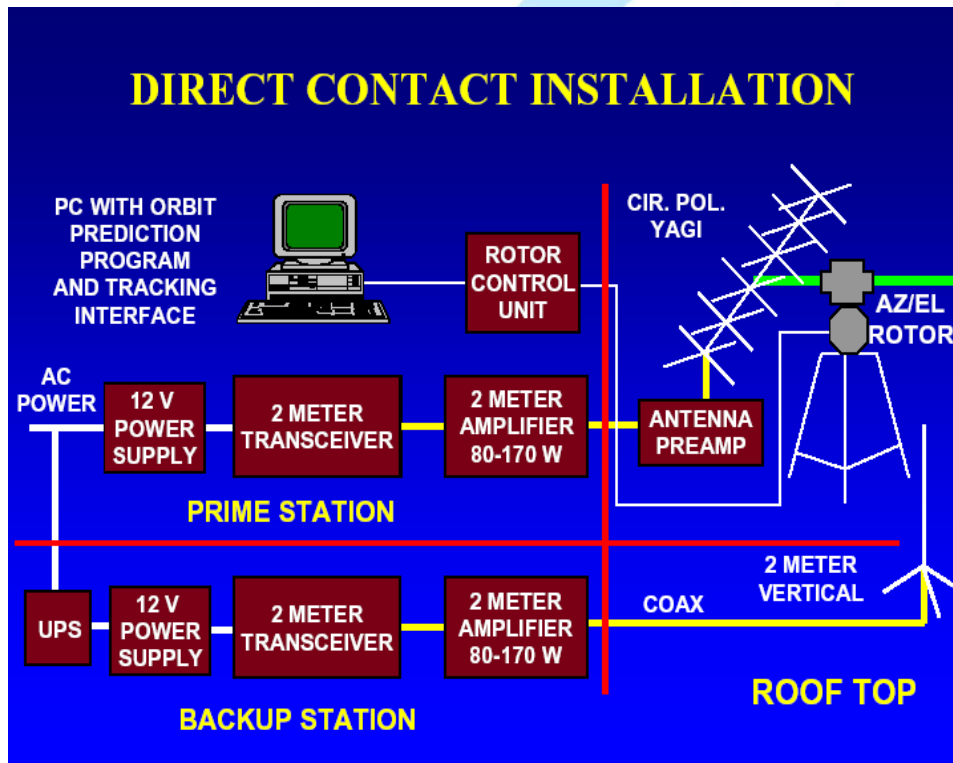
October 31<sup>th</sup> 2007 at 07:33 UTC another two Italian schools established a radio contact with ESA astronaut Paolo Nespoli, IZ0JPA, onboard the ISS. This is the 4<sup>th</sup> direct contacts with the ISS by two schools involved simultaneously.





# 1<sup>th</sup> Direct / Telebridge ARISS school contact

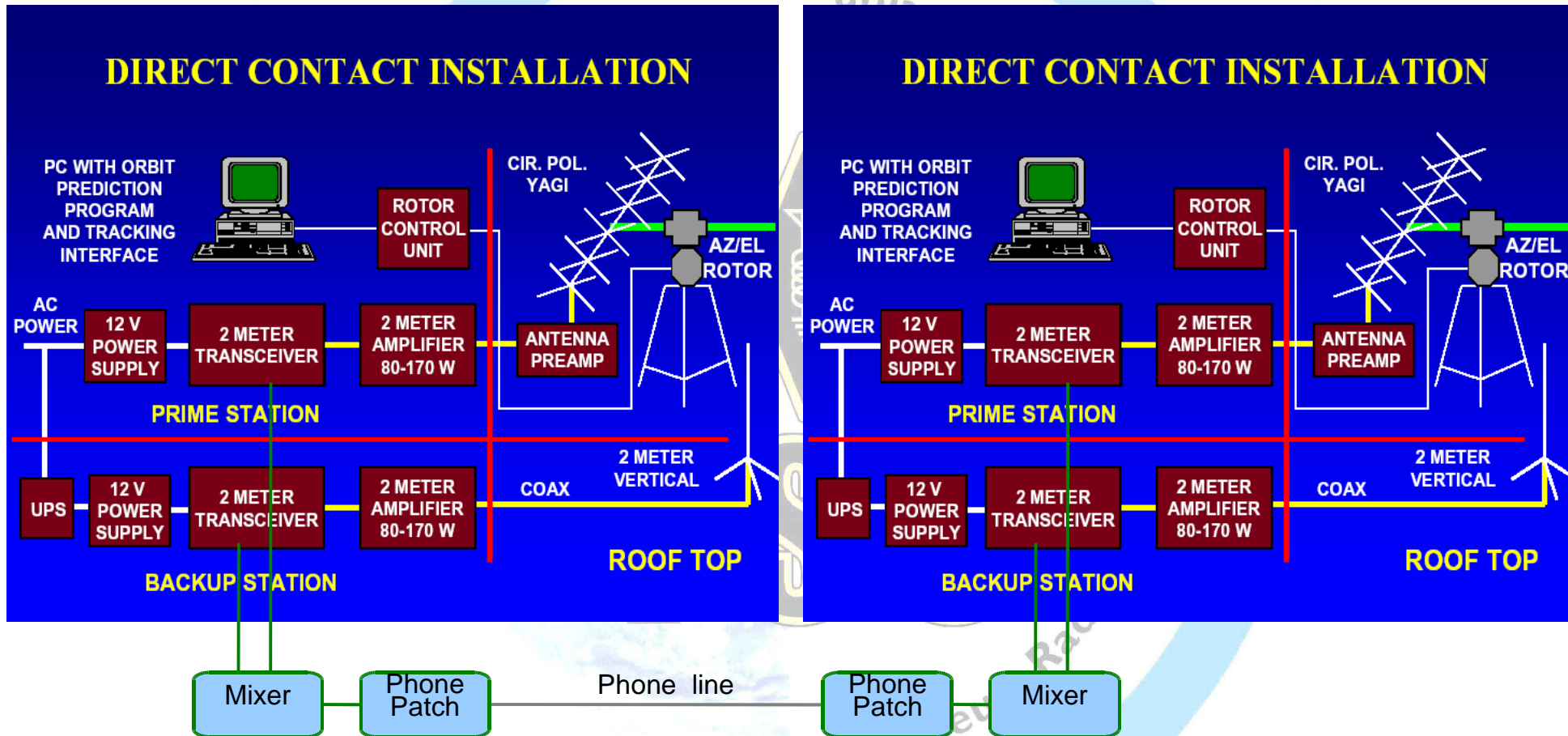
## SET UP



This contact was a combination of direct and telebridge with involvement of one amateur radio station located in each school.

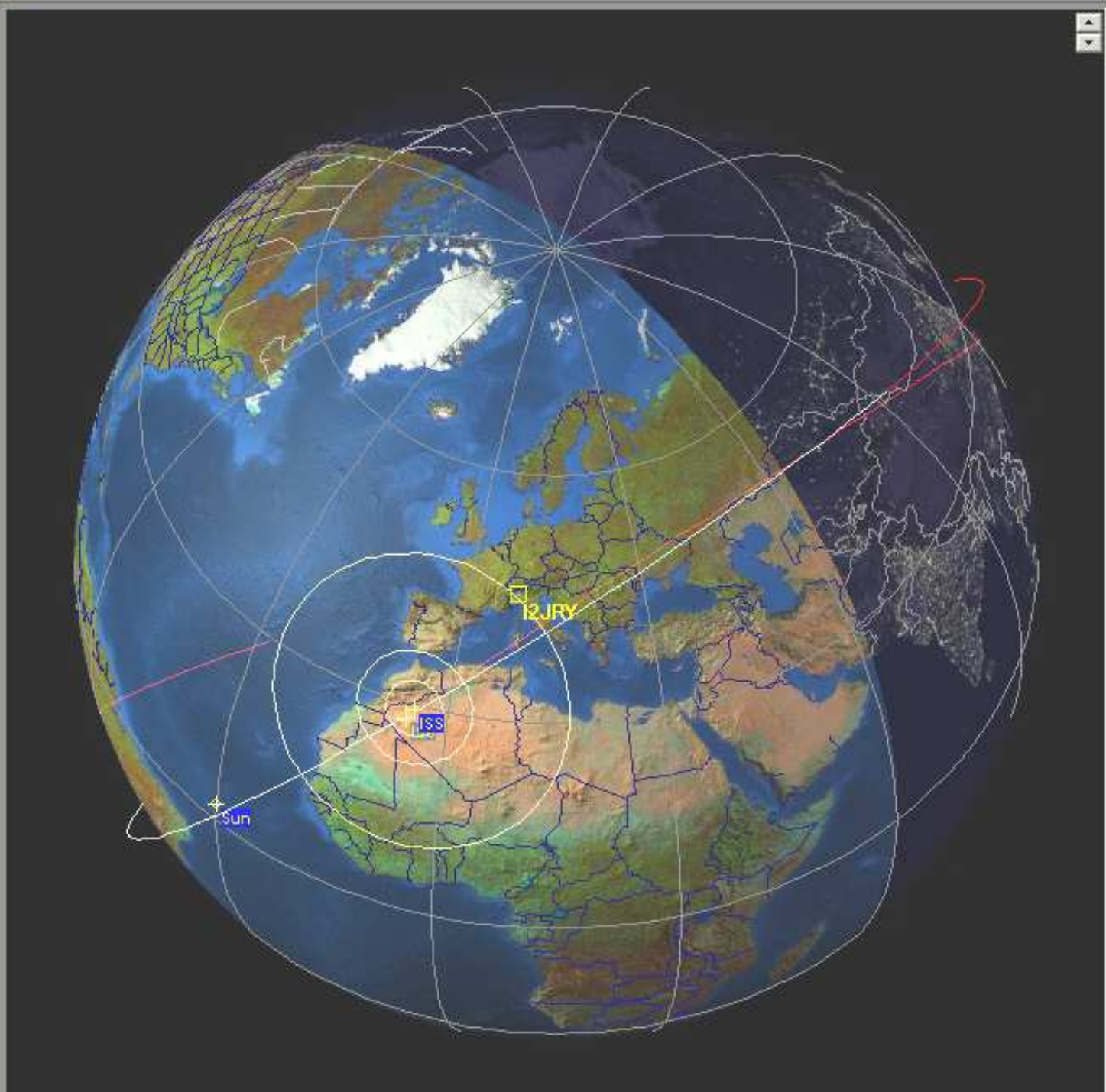
# 1<sup>th</sup> Direct / Telebridge ARISS school contact

## SET UP



...each school both connected by phone-patch.

Each school forward the event on Internet via audio/video streaming.



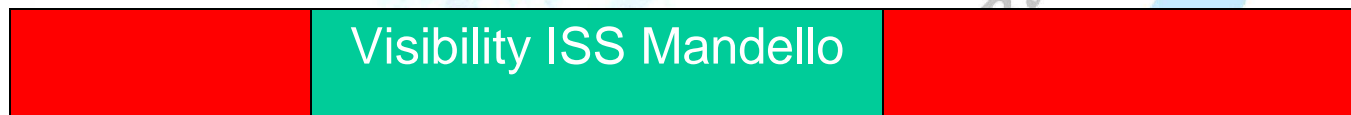
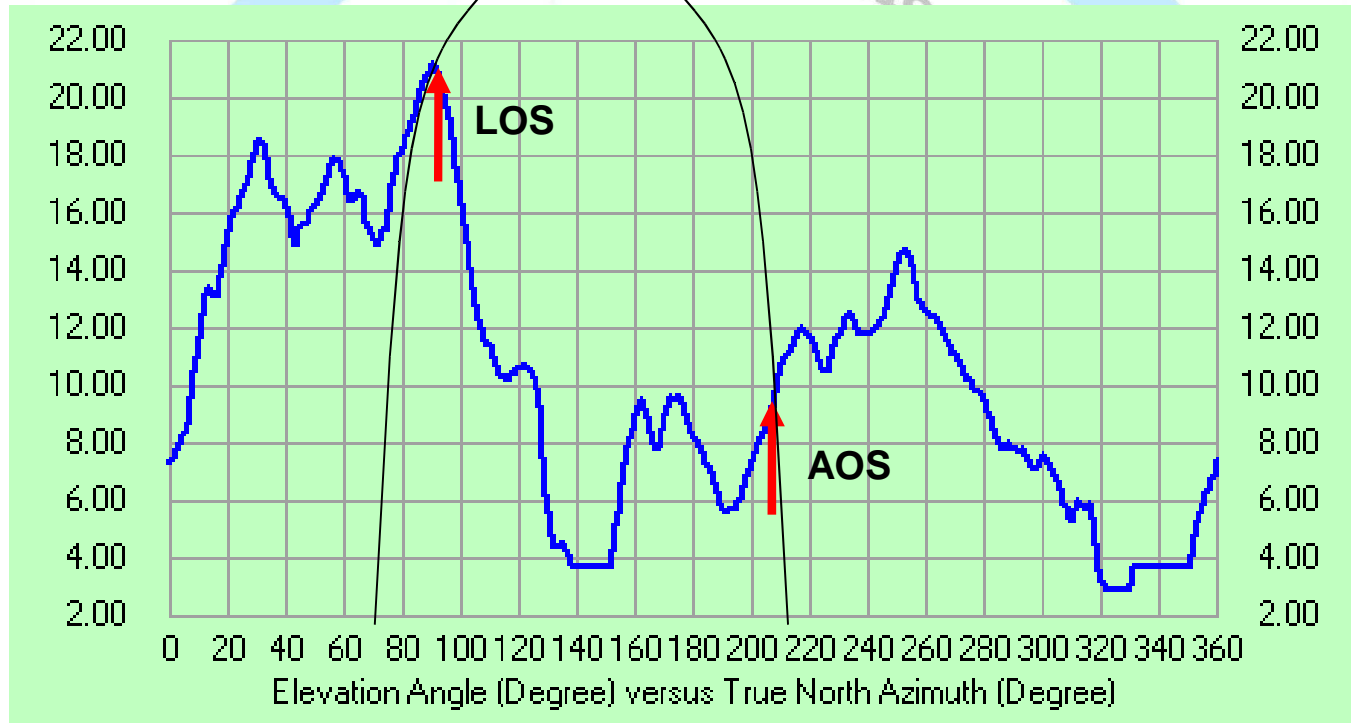
1 Sat	ISS
Azimuth	218.4°
Elevation	0.0°
Range	2,232.0 km
Height	360.1 km
AOS time	14:05:00 UTC
LOS time	14:14:58 UTC
Until	00:09:58
Duration	00:09:59
AOS Az.	218°
Max El.	33°
LOS Az.	66°
Visual	
Orbit #	59,310

Navigation and control icons including: back, forward, stop, home, search, and other utility icons.

# 1<sup>th</sup> Direct / Telebridge ARISS school contact

Friday, 27 March 2009 at 14:05 UTC

ISS orbit and obscuration



AOS

TCA

LOS

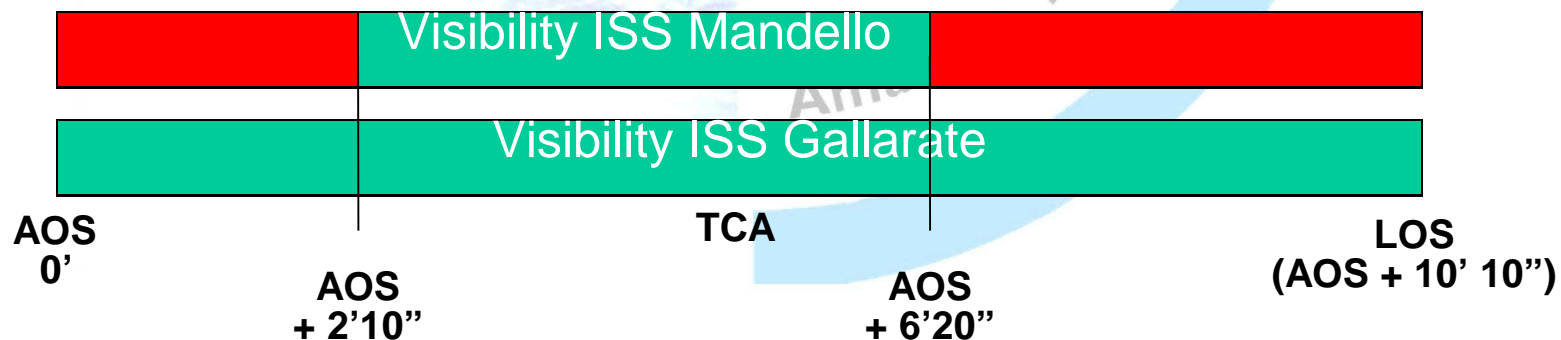
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The contact was established by I2JRY, then IZ2PBM took over and finally I2JRY ended the QSO.

At 14:05 UTC, contact with OR4ISS was established by station I2JRY. Commander Mike Fincke answered 5 questions per telebridge.

At 14:09 UTC, contact with OR4ISS was established by station IK2PBM. Commander Mike Fincke answered 7 questions in direct contact.

At 14:12 UTC, contact with OR4ISS was established by station I2JRY. Commander Mike Fincke answered 4 more questions by telebridge. The signal from the ISS was loud and clear all time.



1<sup>th</sup> Direct / Telebridge ARISS school contact

**SUCCESS !**

... 5 questions per telebridge, 7 questions in direct contact and 4 more questions by telebridge.

...audience of more than 50 (Gallarate) and 200 (Mandello) pupils, teachers, visitors and media could follow the contact

Regional Television, including RAI 3, UnicaTV and Space-iTV, local media and newspapers covered the event.

Streaming video counted 64 connections:

Australia 2, Austria 1, Germany 3, France 2, French Guiana 1, Italy 48 and USA 7.

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## Direct / Telebridge ARISS school contact

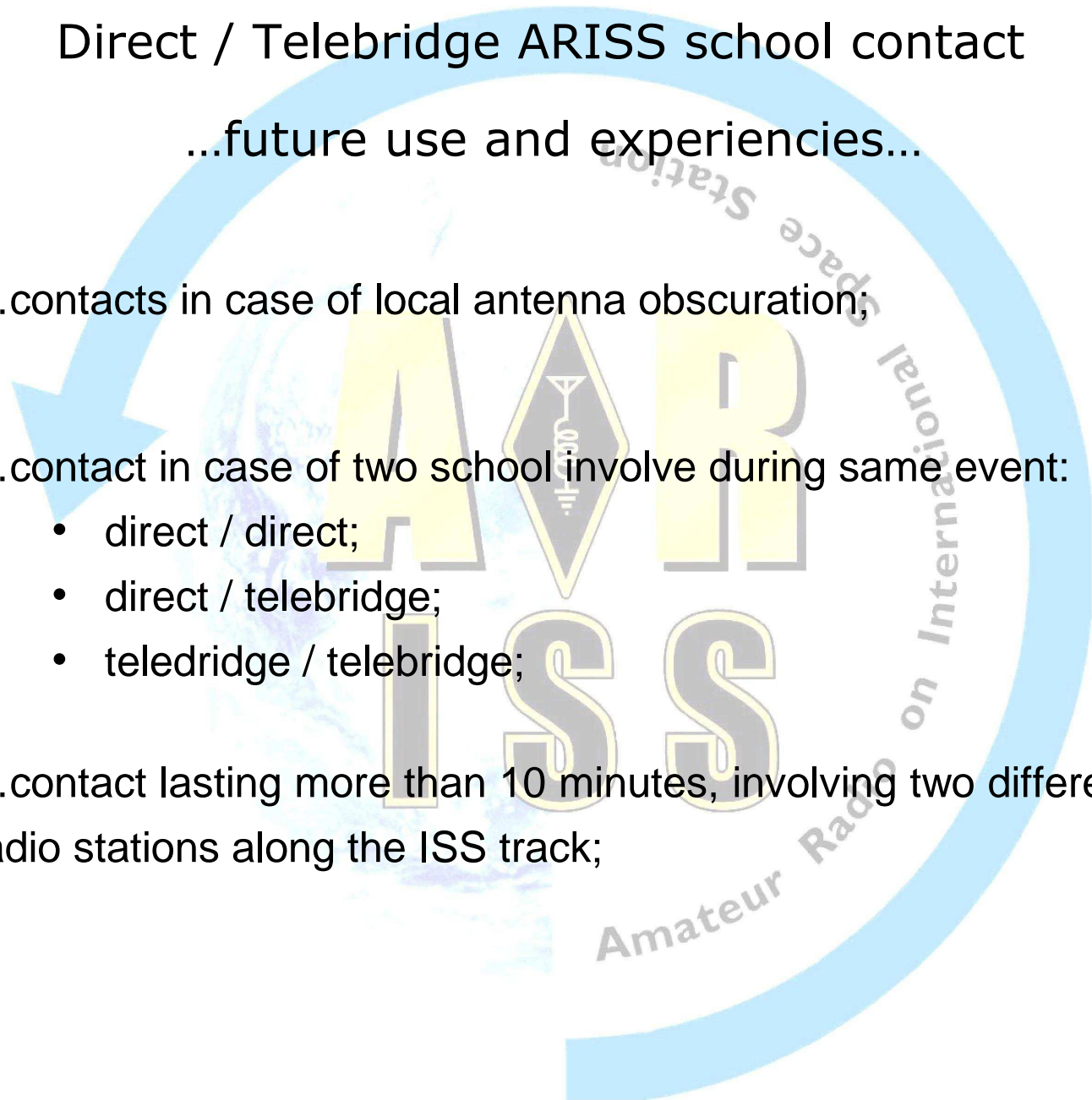
...future use and experiences...

...contacts in case of local antenna obscuration;

...contact in case of two school involve during same event:

- direct / direct;
- direct / telebridge;
- telebridge / telebridge;

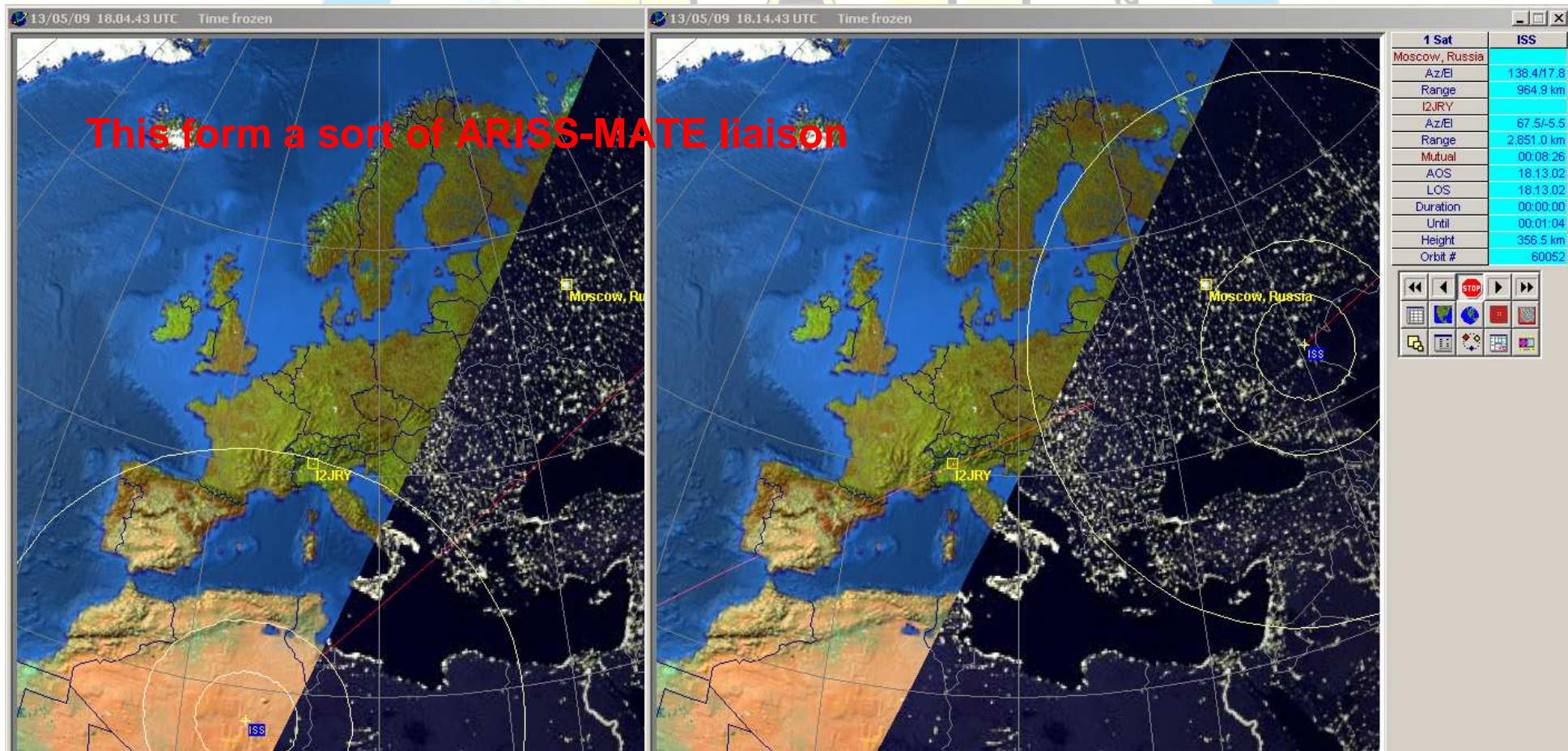
...contact lasting more than 10 minutes, involving two different radio stations along the ISS track;



# Direct / Telebridge ARISS school contact

...future use and experiencies...

...if we consider two stations, one located in north Italy and the other in Moscow, interconnected by phone-patch, we are able to run around 15 minutes school contact involving students from two different countries.





...thanks a lot !

...good luck !

73 de Francesco – IKØWGF

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