

Geodetic Observatory TIGO in Concepción

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Abstract

Throughout 2005 TIGO contributed with 118 successful observations, 22 more than in 2004. TIGO participated also in the CONT05 campaign continuously during two weeks. Activities of the VLBI group at TIGO during 2005 and an outlook for 2006 are given.

1. General Information

The operation of TIGO is performed by an agreement between Germany and Chile where

- Bundesamt für Kartographie und Geodäsie
- Universidad de Concepción
- Universidad del Bío Bío
- Instituto Geográfico Militar

guarantee their participation until the end of 2007.

TIGO is located near the Universidad de Concepción—500 kilometers to the south of Santiago, Chile's capital—at longitude 73.025 degrees West and latitude 36.843 degrees South.

2. Component Description

The IVS network station TIGOCONC is the VLBI part of the Geodetic Observatory TIGO, which was designed to be a fundamental station for geodesy. Hence the VLBI radiotelescope is co-located with an SLR telescope (ILRS site), a GPS/Glonass permanent receiver (IGS site) and other instruments such as a water vapour radiometer, a superconducting gravity meter, and a seismometer.

The atomic clock ensemble of TIGO consists of 2 hydrogen masers, 3 cesium clocks and 3 GPS time receivers realizing the Chilean contribution to the Universal Time scale (Circular T, BIPM). A new Septentrio dual-frequency GPS receiver for time-transfers was added in 2005. This receiver is phaselocked to the hydrogen maser used by VLBI operation allowing for new strategies of clock synchronisation.

3. Staff

In January 2005 Carlos Verdugo, mechanical engineer, joined the VLBI staff as cryogenics and antenna mechanics expert. Roberto Aedo, Carlos Verdugo and Sergio Sobarzo participated in the 2005 IVS TOW. In 2005 the TIGO-VLBI group consisted of the persons listed in Table 1.



Figure 1. The VLBI radiotelescope in TIGO facility.

Table 1. TIGO-VLBI support staff in 2005.

Staff	Function	Email
Hayo Hase	head	hayo.hase@tigo.cl
Sergio Sobarzo	chief engineer	sergio.sobarzo@tigo.cl
Cristobal Jara	electronic engineer	cristobal.jara@tigo.cl
Roberto Aedo	electronic engineer	roberto.aedo@tigo.cl
Gonzalo Remedi	informatic engineer	gonzalo.remedi@tigo.cl
Carlos Verdugo	mechanical engineer	carlos.verdugo@tigo.cl
any VLBI-operator	on duty	vlbi@tigo.cl
all VLBI-operators		vlbistaff@tigo.cl

4. Current Status and Activities

During 2005 TIGO was scheduled to participate in 130 experiments. Unfortunately we lost 12 experiments mainly due to cryogenics problems when a spare part had to be used and died before we had a spare replacement at hand (see details in Table 2). For the first time TIGO took part in the CONT05 campaign with 15 days of continuous observations.

Throughout 2005 we had not been able to replace our X-band LNA which showed occasionally additional noise in the RF. The available spare part at TIGO was tested in Germany but failed after installation. Finally it was declared broken by the manufacturer. In 2006 we will try to replace it, when a new LNA will be delivered.

The plan to buy a spare dewar for TIGO failed, as no company was able to make an appropriate offer to BKG.

During the CONT05 campaign we suffered from a serious problem with the energy chain of the azimuth part of the radiotelescope. This chain broke and was repaired within 6 hours. The reason for breaking was found in the mechanical use. The chain will be replaced in 2006 when the replacement parts will arrive in Chile.

In 2005 a software for remote VLBI operation was developed. This software runs as a Java applet on any web browser. It can be implemented to become part of the PC-Field System. An example of the applet running in a browser is shown in Figure 2.

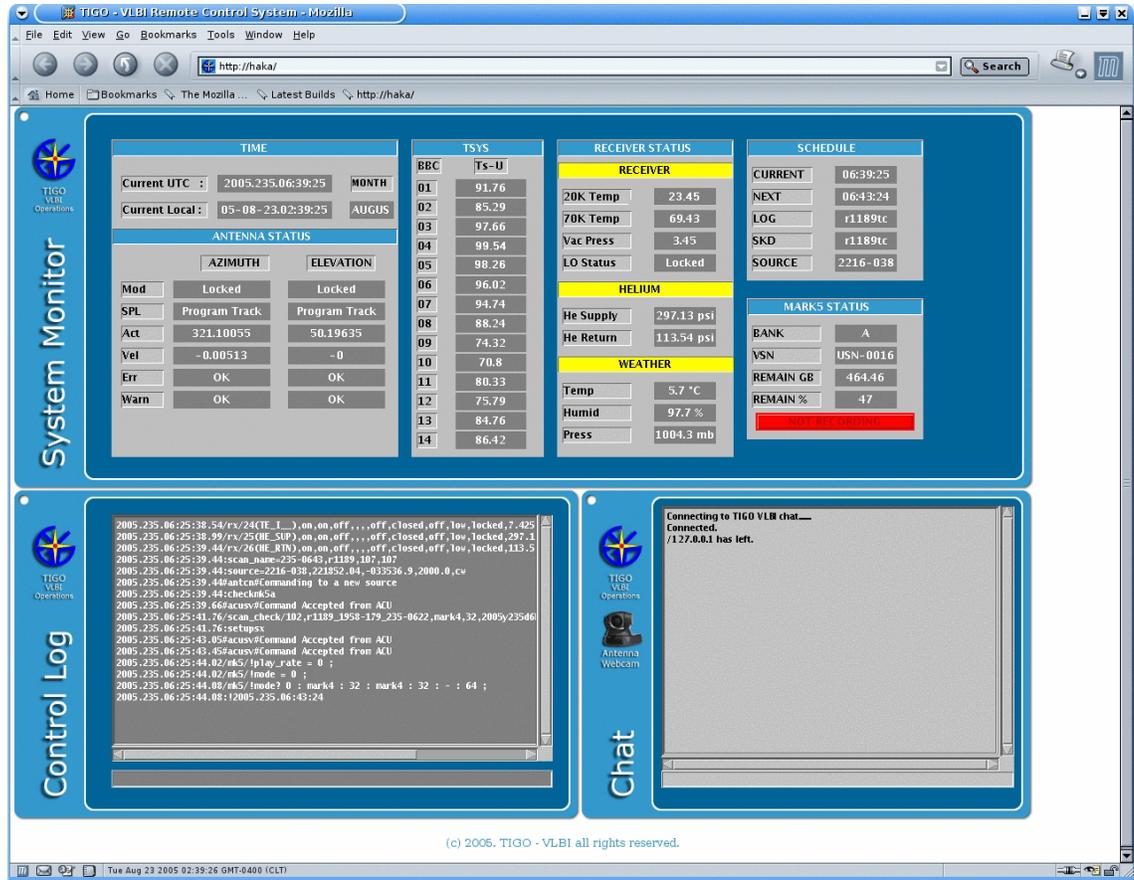


Figure 2. View of the Remote Control applet in a browser.

5. Future Plans

The vision VLBI2010 was presented to the Universidad de Concepción with the intention to consider a domestic project on constructing a second radiotelescope. This proposal was taken seriously by the TIGO hosting institution.

The VLBI-activities in 2006 will focus on

- execution of the IVS observation program for 2006,
- investigations on the realization of VLBI2010 in Concepción,

Table 2. TIGO's IVS observation statistics for 2005.

Name	# of exp.	ok	failed
R1xxx	42	37	5
T20xx	6	5	1
E30xx	11	10	1
R4xxx	46	43	3
RDVxx	5	5	-
OHIGxx	5	3	2
C05xx	15	15	-
Total IVS	130	118	12

- investigations related to eVLBI
- fund allocation for eVLBI to get more bandwidth,
- general radiotelescope maintenance including replacement of energy chain and X-LNA,
- experimental satellite trackings,
- repetition of the local survey.