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Visit of STC to Possible Sites for the VLT in Northern Chile

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The STC (Scientific Technical Committee) met at La Silla the 8th and 9th of October. Following the meeting, a 3-day-long trip to northern Chile brought the STC members (Fig. 1) to and above a few sites which have been picked up as potentially interesting spots by A. Ardeberg during his exploratory survey of 1983/84.

One of the most promising sites is Cerro Paranal, located at about 150 km south of Antofagasta and 15 km from the coast (Fig. 2). The elevation is 2,650 m. This site is attractive because of its relatively easy access, its dryness and photometric quality. Its proximity to the coast raises hope that the atmosphere is little disturbed by neighbouring mountains and that consequently seeing is excellent. As noted by a few STC members, the site suffers from its relative narrowness and although the space available would be quite sufficient for the VLT, there would be little space for other telescopes. Other summits in the neighbourhood could however be used.

Another close-by mountain, Cerro Armazonas, 3,100 m high, has also been visited. It is much larger than Paranal but, further inland by about 22 km, it may not be as good as Paranal, though only an objective comparison could ascertain this.

The region close to the Bolivian border, north-east of San Pedro d'Atacama, is rich of very high elevation volcanos; a 3-hour ride from San Pedro brought courageous STC members up to one of the few accessible volcanos, the Apogado at 5,650 m elevation. As shown in Fig. 1, (some) STC members felt still very comfortable, although even slight efforts were painfully experienced. Locating an observatory at such an elevation would probably be quite adventurous, but the fundamental problem remains the determination of the value of such sites with respect to La Silla and other excellent sites such as Mauna Kea.

There are many sites in Chile which, with elevations of about 4,000 m, would represent a good compromise between the desire to go as high as possible and the necessity to offer bearable working conditions. Experience at Hawaii suggests

that 4,200 m is still acceptable from the human point of view. Such sites can be found in the vicinity of the high volcanos, in the central chain west of San Pedro, and also east of La Silla. None of those mountains appears completely isolated and access is rather difficult, but they would probably deserve attention, especially if the other lower elevation sites would prove to be unsatisfactory either from a seeing or humidity point of view.

After the completion of the initial exploratory survey, started in 1983 by Arne Ardeberg, a larger scale programme of investigation is being defined.

A dedicated working group composed of European experts in the field has been set up and will issue recommendations. Automatic meteorologic stations have already been installed at Paranal and at La Silla; a third station will be installed at one



Fig. 1: Pierre Charvin and Gustav Tammann looking still very comfortable at Volcano Apagado at 5650 m altitude. This volcano is one of the very few high summits easily accessible by car.

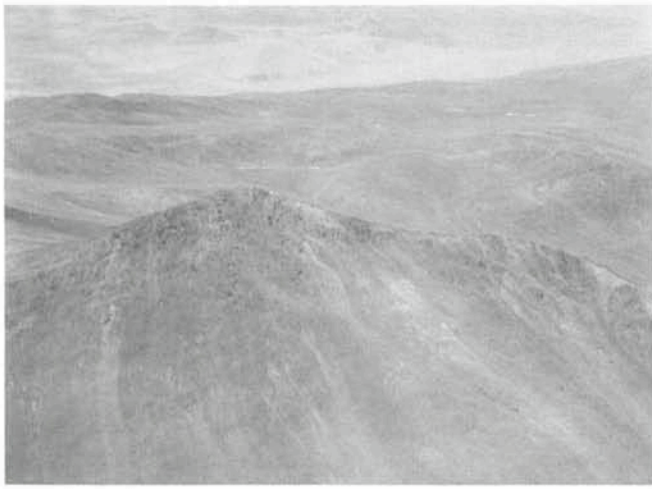


Fig. 2: Aerial view of Cerro Paranal. The elevation is close to 2,700 m and the coast is only at 15 km distance. The white spot at the right hand of the summit is a shelter used by the two persons who monitor the site. The ridge is facing the prevailing wind direction and is about 400 m long.

high elevation site in December. They will provide easy processable data that will complement the data collected since September 1983. A tethered balloon will also permit to measure the turbulence as well as other meteorologic parameters, between 0 and 800 m above sites. This equipment is easily transportable and should permit a preliminary investigation of the local contribution to seeing. More permanent equipment, such as fast thermal sensors, acoustic radars and seeing monitors, is planned for 1985 at Paranal (and La Silla in view of an absolute calibration with existing telescopes).

The importance of seeing for the new large telescope projects as well as the perspective for improving the image quality through adaptive correction have raised up considerable efforts by several groups to better understand the causes of seeing deterioration, and possibly find cures. Despite the difficulty of comparing quantitatively results obtained by different methods at different places, it is hoped that within 2 to

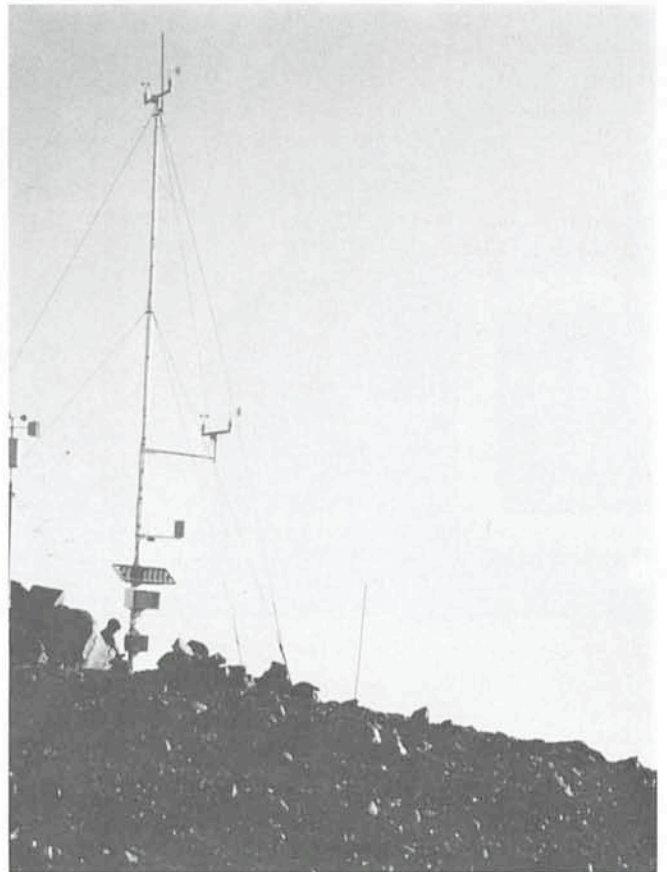


Fig. 3: A new automatic meteorologic station at Cerro Paranal. Another station is installed at La Silla on a 30 m high mast. A third one will be installed on a high elevation site.

3 years an agreement could be reached on a few vital questions such as "what makes a site really good?", or "how important is it to set a telescope at a high site?". Those questions are indeed of paramount importance for the ESO VLT.

Blue Compact Galaxies: Infants of the Universe?

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1. What is a Blue Compact Galaxy?

Shortly after the completion of the 48" Palomar Observatory Schmidt telescope in the beginning of the 1950s, a great number of stellar objects with fuzzy images were discovered on photographic plates obtained with the instrument. Subsequent spectroscopic observations revealed that these so-called "stars" actually were of extragalactic nature. In the 1960s Fritz Zwicky established this new fascinating type of objects as a separate morphological type, the "compact galaxies", CGs, defining them by their stellar appearance and by demanding that their surface luminosity should be brighter than 20^marcsec^{-2} . Examples of three such cases, which we are presently investigating, are given in Fig. 1.

Historically it is interesting to note that while Zwicky thought that many compact galaxies represented one of the final stages in the life of a galaxy, closely related to what he called

"OBJECT HADES", supposed to be "ultimate objects of greatest compactness", most work today is done on compact galaxies that have properties more typical of newly formed galaxies.

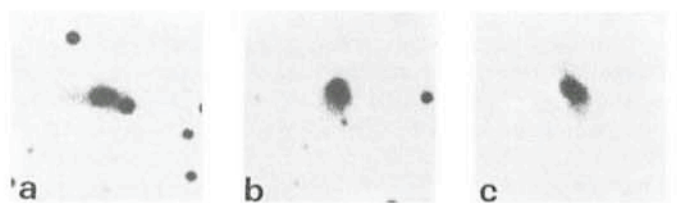


Fig. 1: Three blue compact galaxies as seen on the ESO Quick Blue Survey plates obtained with the ESO 1 m Schmidt telescope: (a) ESO 338-IG04, (b) ESO 400-G43, (c) ESO 480-IG12 (1 arcmin = 17 mm). Top is north, east is to the left.