

ASTRONOMY IN SOUTH AFRICA

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This note reviews those aspects of astronomy in South Africa that may be useful for the support of astronomical development on the rest of the African continent.

Optical and infrared astronomy is largely consolidated at the Sutherland site of the South African Astronomical Observatory (SAAO), about 300 km from Cape Town. The administrative and technical headquarters of this institution occupy the buildings of the old Royal Observatory (founded in 1820) in Cape Town. In Cape Town there is a twin 18/24 inch (0.45/0.6m) refractor and an 18-inch (0.45m) photometric reflector still operational. At Sutherland the 74-inch (1.8m Radcliffe) reflector is equipped for spectroscopy, CCD imaging and IR photometry. Newtonian and coudé foci are available but rarely used. Also at Sutherland there are 40-inch, 30-inch and 20-inch telescopes (approx. 1m, 0.75m and 0.5m) used primarily for CCD imaging (40-inch), optical and infrared photometry (30-inch) and UVBRI standard photometry (20-inch). An automatic photoelectric telescope (30-inch aperture) is nearing completion. Observing conditions at Sutherland provide about 50% photometric time.

The SAAO is a National Facility, funded through the Foundation for Research Development (FRD). Extensive use of the SAAO has been made by overseas users during the past two decades. Many international collaborative projects have been and are being undertaken. Applications for observing time may be made to the Director, SAAO, P.O.Box 9, Observatory 7935, South Africa.

Radio astronomy is concentrated at Hartebeesthoek Radio Astronomical Facility (HartRAO) sixty kilometres north-west of Johannesburg. This is a National Facility, equipped with a 26m equatorially mounted radio dish (evolved from a NASA Deep Space Station) suitable for centimetric and longer wavelength studies. Radio, spectroscopic, VLBI, survey and pulsar-monitoring studies are undertaken, including international collaborative studies. Applications for observing time or collaborative studies may be made to The Director, HartRAO, P.O.Box 443, Krugersdorp 1740, South Africa.

Plans are under way to finance the construction of a 3.5m optical reflector, to be installed either at Sutherland or at the Gamsberg site (150km west of Windhoek) in Namibia, owned by the Max Planck Institute of Astronomy at Heidelberg. This is known as the South African Large Telescope (SALT) project and is being viewed as a telescope that will primarily support astronomy in the southern subcontinent, but would be available to qualified users throughout sub-Saharan Africa.

Astronomical education at the tertiary level is available at several universities, the principal of which are:

University of Cape Town, which has provided undergraduate courses (but no first degree) in the Department of Astronomy since 1970, and B.Sc.(Hons), M.Sc. and Ph.D. programmes. A first degree (B.Sc.) astronomy programme was started in 1994. The research programmes make use of the SAAO facilities. The Applied Mathematics Department runs a cosmology and general relativity programme (under Prof. G.R.Ellis).

Rhodes University (Grahamstown), Physics and Electronics Department specializes in research in radio astronomy. The personnel are the principal academic users of HartRAO.

University of Potchefstroom, Department of Physics, specializes in ground-based gamma-ray astronomy, cosmic-ray, heliosphere and high-energy astrophysics research.

University of South Africa (Department of Mathematics, Applied Mathematics and Astronomy, P.O.Box 392, Pretoria 0001, South Africa) is a correspondence university with over 122,000 students, of which 87% are from South Africa, 11.5% from the rest of Africa and the remainder from all parts of the world. They have about 90 first-year astronomy students, 10 second-year and 3 third-year students, on average. In addition, B.Sc. (Astronomy), B.Sc. (Honours), M.Sc. and Ph.D. courses are offered.

Astronomy courses and supervision are also offered at the University of the Witwatersrand, the University of the Orange Free State (Bloemfontein) and the University of Natal (Durban).

An advantage of tertiary education in South Africa is that fees and living costs are very much lower than the equivalents in Europe or North America. Degree standards are maintained at international levels (by the use of, for example, overseas examiners for higher degrees).

The Universities, libraries and scientific institutions in South Africa are connected by UNINET, which itself is connected into INTERNET.

Other astronomical activities include major planetaria at the South African Museum (Cape Town) and the University of the Witwatersrand, which process about 100,000 schoolchildren per year, as well as large numbers of adults. The Astronomical Society of Southern Africa is a largely amateur organization with significant professional membership.

Discussion: The Chairman pointed out that the University of South Africa had submitted a poster abstract for the General Assembly. Although the full poster did not appear to have reached The Hague, the abstract was in the Abstract Book. Jones spoke about the U.K. Open University. Jonas provided some extra details about the HartRAO telescope, which operates from $\lambda = 2.5\text{cm}$ to $\lambda = 18\text{cm}$. The main fields of research are VLBI, radio spectroscopy, pulsar timing, variable sources and radio-continuum mapping. He also mentioned that Rhodes University is the central node of the Southern African INTERNET network. The staff of the computer centre have great experience in providing computer network connections to very remote sites. The contact address is: The Director, Computer Services Unit, Rhodes University, Grahamstown 6140, South Africa (ccd@KUOU.RU.AL.ZA)