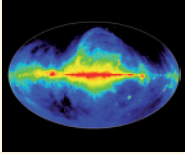


Expert Committee
Committee on Radio Astronomy
Frequencies ^{CRAF}

Expert Committee

Committee on Radio Astronomy Frequencies



Radio Sky at 408 MHz. The map has 0.85 degree resolution and has been compiled from measurements in Effelsberg (Germany), Jodrell Bank (UK) and Parkes (Australia). It clearly shows that the northern and the southern sky need to be accessible for radio astronomy.

Source: A 408 MHz all-sky continuum survey. II – The atlas of contour maps
Authors: Haslam, C. G. T.; Salter, C. J.; Stoffel, H.; Wilson, W. E.
Astronomy and Astrophysics Supplement Series, vol. 47, Jan. 1982

What is the Committee on Radio Astronomy Frequencies?

Established in 1988, the Committee on Radio Astronomy Frequencies (CRAF) represents all the major radio astronomical observatories in Europe. Its mission is to coordinate the protection of the frequency bands used by radio astronomers in Europe to keep them free from interference. This task will remain indispensable for astronomical science in the foreseeable future.

The committee's pursuit of this goal is becoming increasingly difficult because of the steady increase in global use of the electromagnetic spectrum for both terrestrial and space-borne communications such as mobile telephones. CRAF is working to address this issue by coordinating a common policy on spectrum protection for the European research communities in radio astronomy, passive remote sensing and related sciences; representing this policy and these communities in interactions with the relevant national and supranational entities at the European and international level; and initiating and encouraging scientific studies aimed at reducing interference and the effects of interference at source. At the European level, the committee plays a key role in defining, coordinating and articulating the frequency needs of the radio astronomy community.

CRAF is an Expert Committee of the European Science Foundation (ESF). The ESF is an independent organisation, owned by 79 Member Organisations among which are funding organisations and research organisations, academies and learned societies from 30 countries. ESF promotes collaboration in research itself, in the funding of research and in science policy activities at the European level.





CRAF mission

CRAF aims to coordinate the European efforts for the protection of *radio spectrum bands* used by the Radio Astronomy Service and other passive applications. CRAF works towards this task by:

Coordinating the radio astronomy case in Europe in discussions with the major public and private telecommunications agencies.

Acting as the European voice in concert with other groups of radio astronomers in discussions within the international bodies that allocate frequencies.

Initiating and encouraging scientific studies aimed at reducing interference at source, as well as the effects of interference.

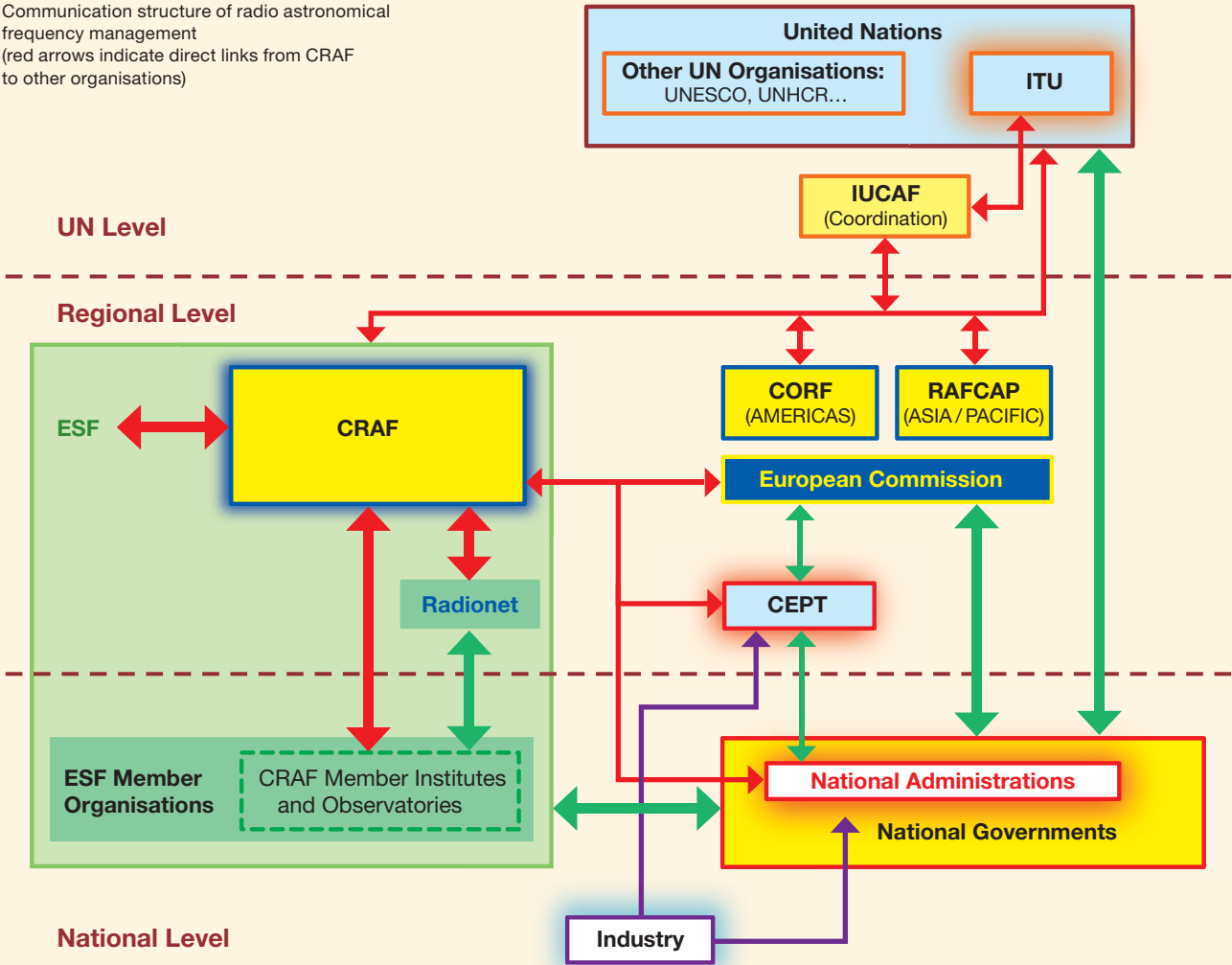
The Committee also acts to help EISCAT – the European Incoherent Scatter Scientific Association – whose expensive radar equipment and important passive experiment in the polar ionosphere faces similar severe interference problems.

Effelsberg Radio Observatory:
Aerial view with the 100m telescope and the prepared LOFAR field in the foreground, seen from the south.

© Andreas Schmickler,
Bad Neuenahr.

4 Committee on Radio Astronomy Frequencies

Communication structure of radio astronomical frequency management
(red arrows indicate direct links from CRAF to other organisations)



CEPT: European Conference of Postal and Telecommunication Administrations

ITU: International Telecommunication Union

IUCAF: Scientific Committee on the Allocation of Frequencies for Radio Astronomy and Space Science (Unesco)

RAFCAP: Radio Astronomy Frequency Committee in the Asia-Pacific region

CORF: US Committee on Radio Frequency Requirements for Scientific Research



Main activities

Radio astronomy is a recognised radio service (like broadcasting or the mobile phone service) which has to be represented in spectrum management committees. CRAF represents radio astronomy in ITU Region I and operates on all three organisational levels of spectrum management.

World:

CRAF is consulted as a recognised member of the radio communication sector of the International Telecommunication Union (ITU), an agency of the United Nations which regulates information and communication technology issues. ITU coordinates the shared global use of the radio spectrum, promotes international cooperation in assigning satellite orbits, works to improve telecommunication infrastructure in the developing world and establishes worldwide standards.

Europe:

CRAF has observer status in CEPT (European Conference of Postal and Telecommunications Administrations) and participates in a consultative capacity in ECC committee meetings. Forty-eight European national regulatory administrations (including Russia, Ukraine and Turkey) are joined in CEPT thereby covering almost the entire geographical area of Europe. The ECC (Electronic Communications Committee) of CEPT works on detailed decisions concerning the harmonised use of the radio spectrum throughout Europe.

National level:

CRAF members are consulted by their national regulatory administrations on radio astronomical spectrum issues. National administrations deal not only with local regulation and coordination problems, but also reflect national government policies on the use of the radio spectrum. They formulate their country's attitudes and decide how to vote on particular issues on the European (CEPT) and global (ITU) scene.

The Atacama Large Millimeter/submillimeter Array (ALMA), one of the largest ground-based astronomy projects of the next decade, is a major new facility for world astronomy. ALMA will be comprised of a giant array of 12-m antennas, with baselines up to 16 km and state-of-the-art receivers that cover all the atmospheric windows up to 1 THz. Construction of ALMA started in 2003 and will be completed in 2013. The ALMA project is an international collaboration between Europe, East Asia and North America in cooperation with the Republic of Chile.

© ALMA (ESO/NAOJ/NRAO)



CRAF membership

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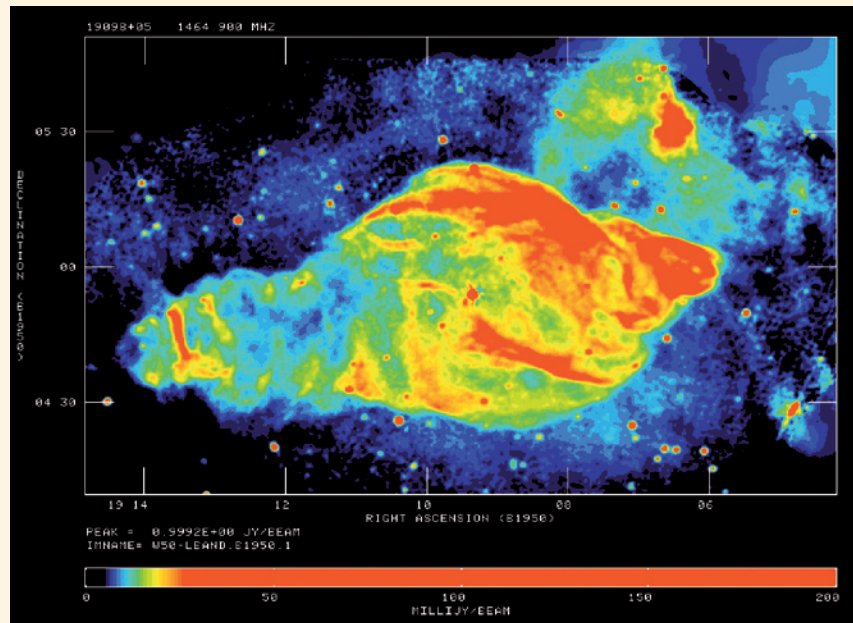
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Left:
The EISCAT
antennas in Svalbard
(Spitzbergen).
© T. Grydeland

Right:
20cm total intensity
map. The highly
unusual compact
object SS 433
appears to be
located near the
centre of W 50,
a large non-thermal
galactic radio source
postulated to be
a SNR.

Investigator(s): Gloria
Dubner, Mark Holdaway,
Miller Goss and Felix Mirabel
Image courtesy of NRAO/AUI



CRAF funding organisations

- **Observatoire Royal de Belgique**
Royal Observatory of Belgium, Belgium
- **Astronomický ústav AVČR**
Astronomical Institute of the Academy of Sciences of the Czech Republic, Czech Republic
- **Research Council for Natural Sciences and Engineering of the Academy of Finland**
Finland
- **Centre National de la Recherche Scientifique (CNRS)**
National Centre for Scientific Research, France
- **Max-Planck Institut für Radio Astronomie**
Max Planck Institute for Radio Astronomy, Germany
- **Istituto Nazionale di Astrofisica (INAF)**
National Institute for Astrophysics, Italy
- **Netherlands Institute for Radio Astronomy (ASTRON)**
Netherlands
- **Hartebeesthoek Radio Astronomy Observatory**
South Africa
- **Observatorio Astronomico Nacional**
National Astronomy Observatory, Spain
- **Onsala Rymdobservatorium**
Onsala Space Observatory, Sweden
- **European Incoherent Scatter Scientific Association (EISCAT)**
Sweden
- **Commission for Astronomy of the Swiss Academy of Sciences**
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- **Science and Technology Facilities Council (STFC)**
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