

“ Quiet, please ! ”

Regulatory protection for the SKA

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Keeping our windows on the Universe clean

The electromagnetic spectrum is a very valuable finite resource, shared by an increasing number of users, driven by commercial interests.

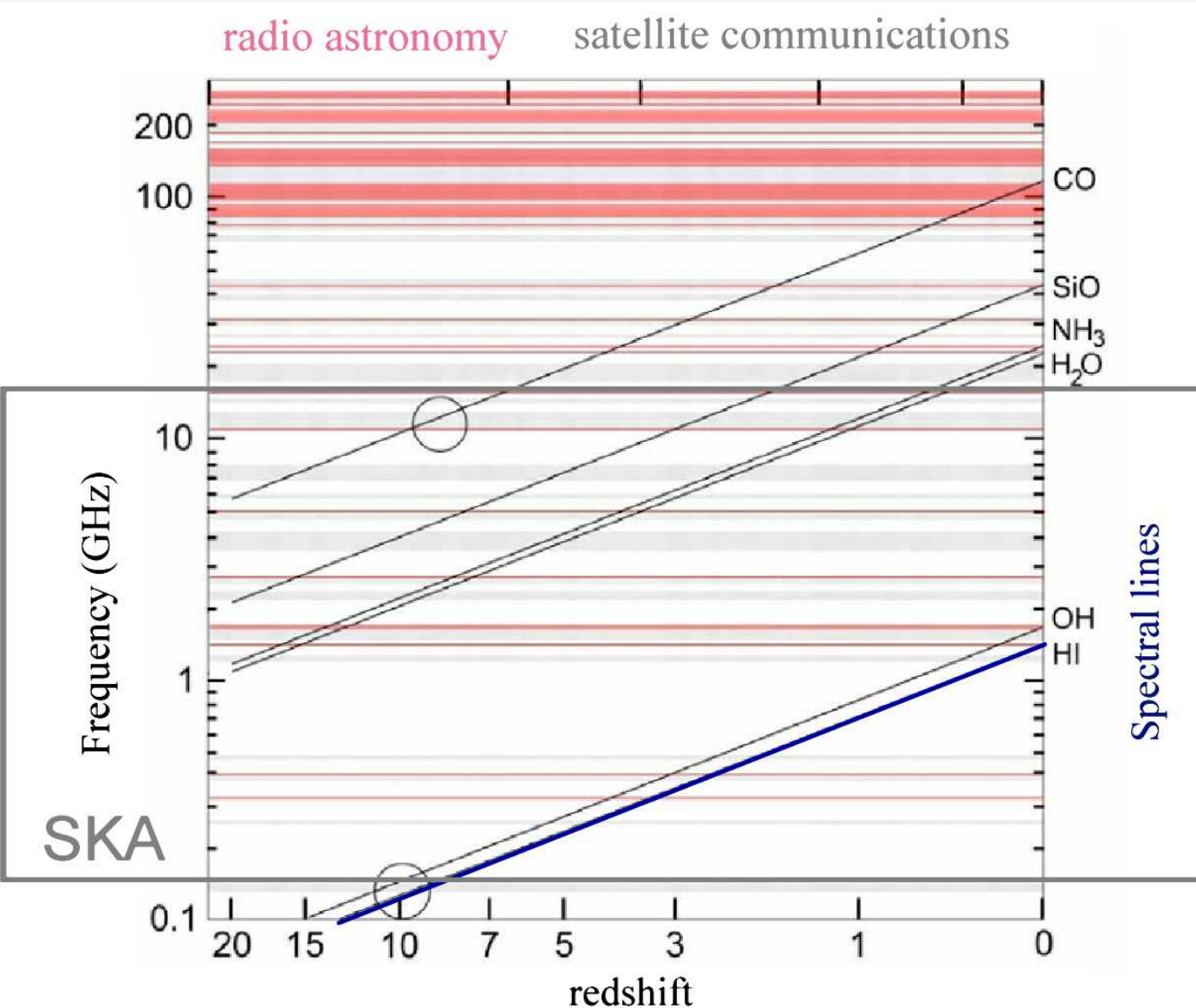
Ways to enable high-sensitivity astronomical observations:

- Technical (interference mitigation)
- Regulatory (spectrum management)

“Prevention is better than a cure”:

the stricter the regulatory limits set on interference levels, the weaker the unwanted signals to be removed will be.

“New radio astronomy”



High-sensitivity observations of radio sources at cosmological distances:

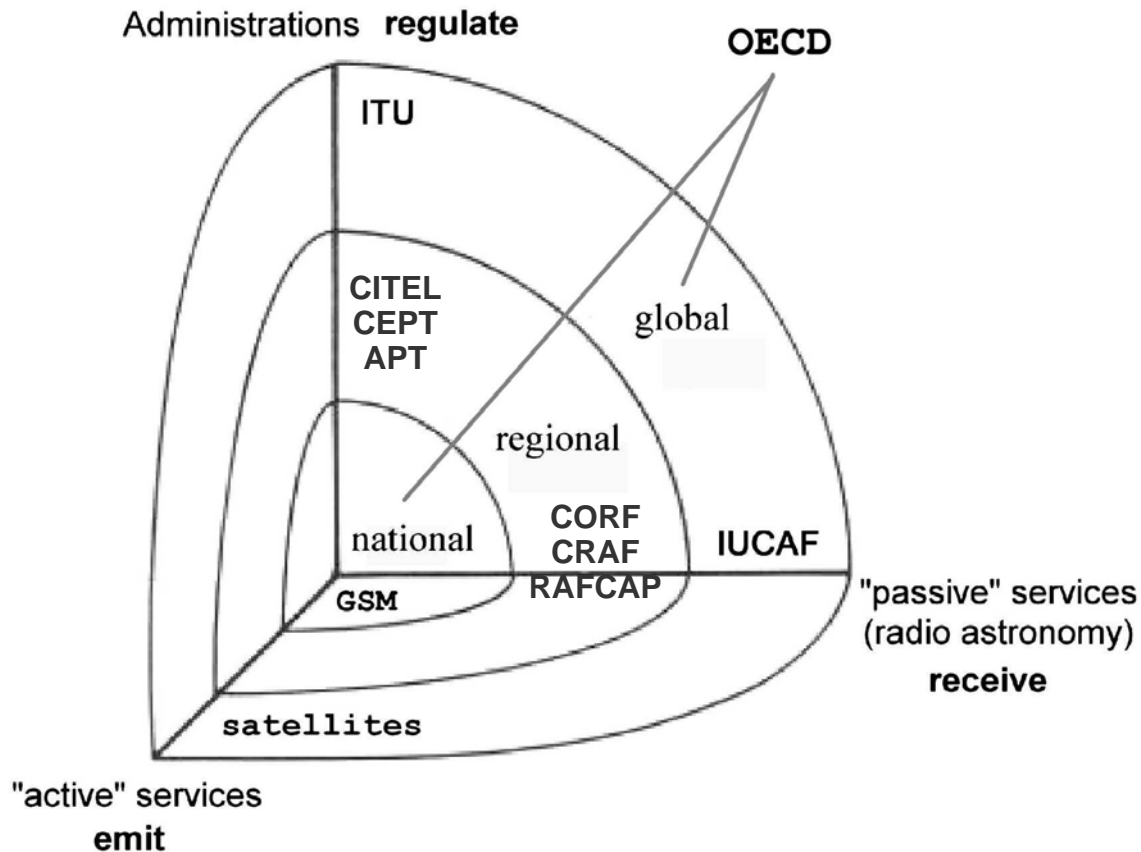
far outside the frequency bands allocated to the radio astronomy service (RAS),

in which we can claim protection from harmful interference

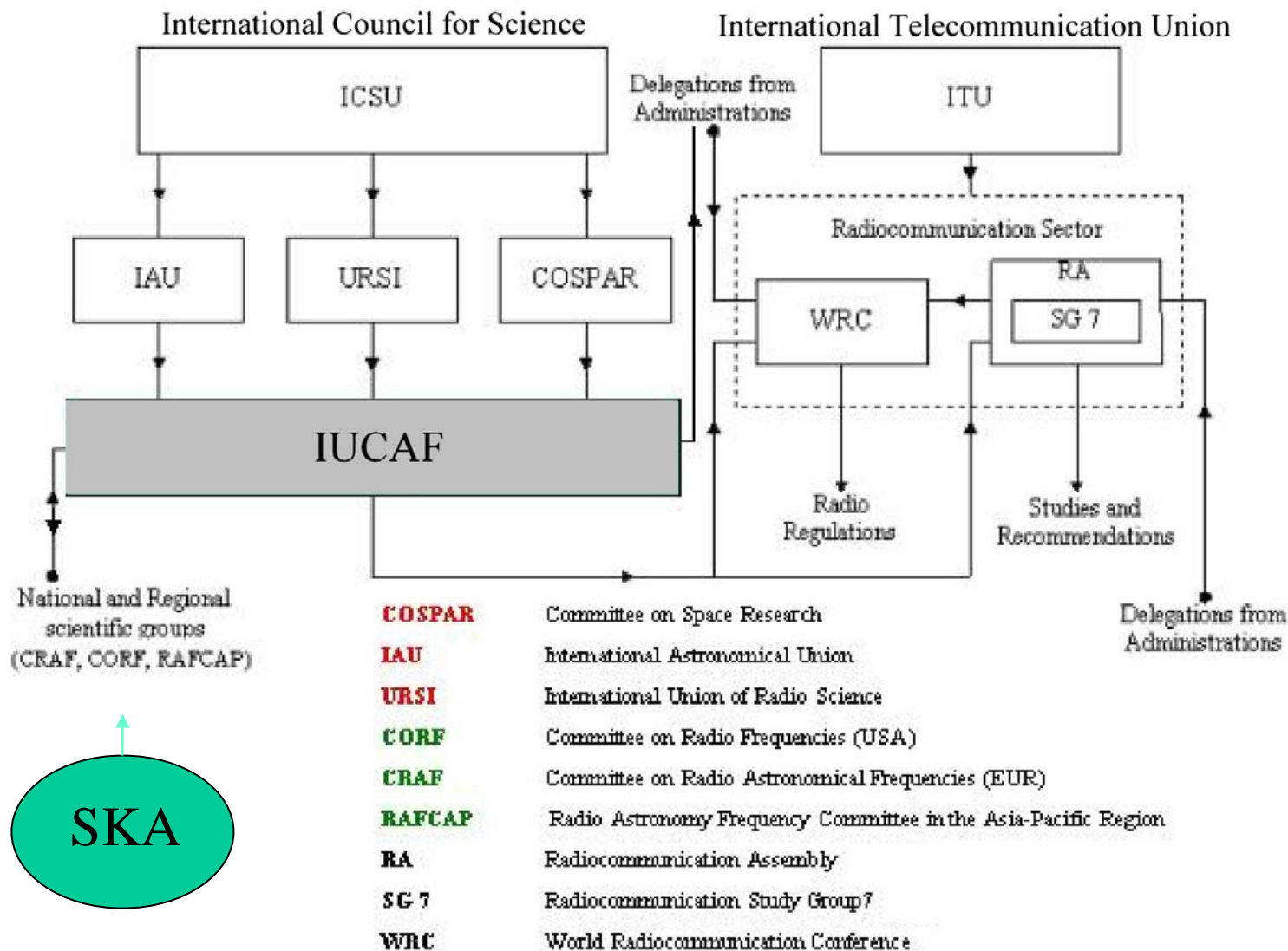
Spectrum management

The task of accommodating all competing services and systems within the finite usable range of the (radio) spectrum

- requires interactions with quite different organisations



The regulatory circus: astronomers and Administrations



At global level: International Telecommunication Union (ITU)

Body responsible for coordinating spectrum management at the global level

Its *Radio Regulations* provide the global framework for spectrum management:

- contain the international Frequency Allocation Table
- international treaty, binding for all members of the ITU
- provide rules to Administrations to regulate equitable access to the spectrum

Updated at World Radiocommunication Conferences (WRC): next in 2007

Conducts technical studies in its Working Parties and Task Groups

- on subjects relating to WRC agenda items and ITU-R Questions

At a regional level: Regional organisations

Three ITU Regions:

Americas	CITEL
Europe / Africa	CEPT [48 countries] /
Asia-Pacific	APT

Regional harmonisation of spectrum use

Common proposals to WRCs [negotiation/voting blocks]

At a national level: Administrations

Mandated to use all possible means to facilitate and regulate radiocommunication, in accordance with the ITU Radio Regulations,

- this includes the enforcement of regulations and the protection of the interests of all users of radio frequencies.

They regulate, e.g., the implementation of *Radio Quiet Zones* or exclusion- and coordination zones around radio observatories (for terrestrial transmitters only, not for satellites...).

Another route – the OECD Global Science Forum

Venue for meetings of senior science policy officials, to identify and maximise opportunities for international co-operation in basic scientific research.

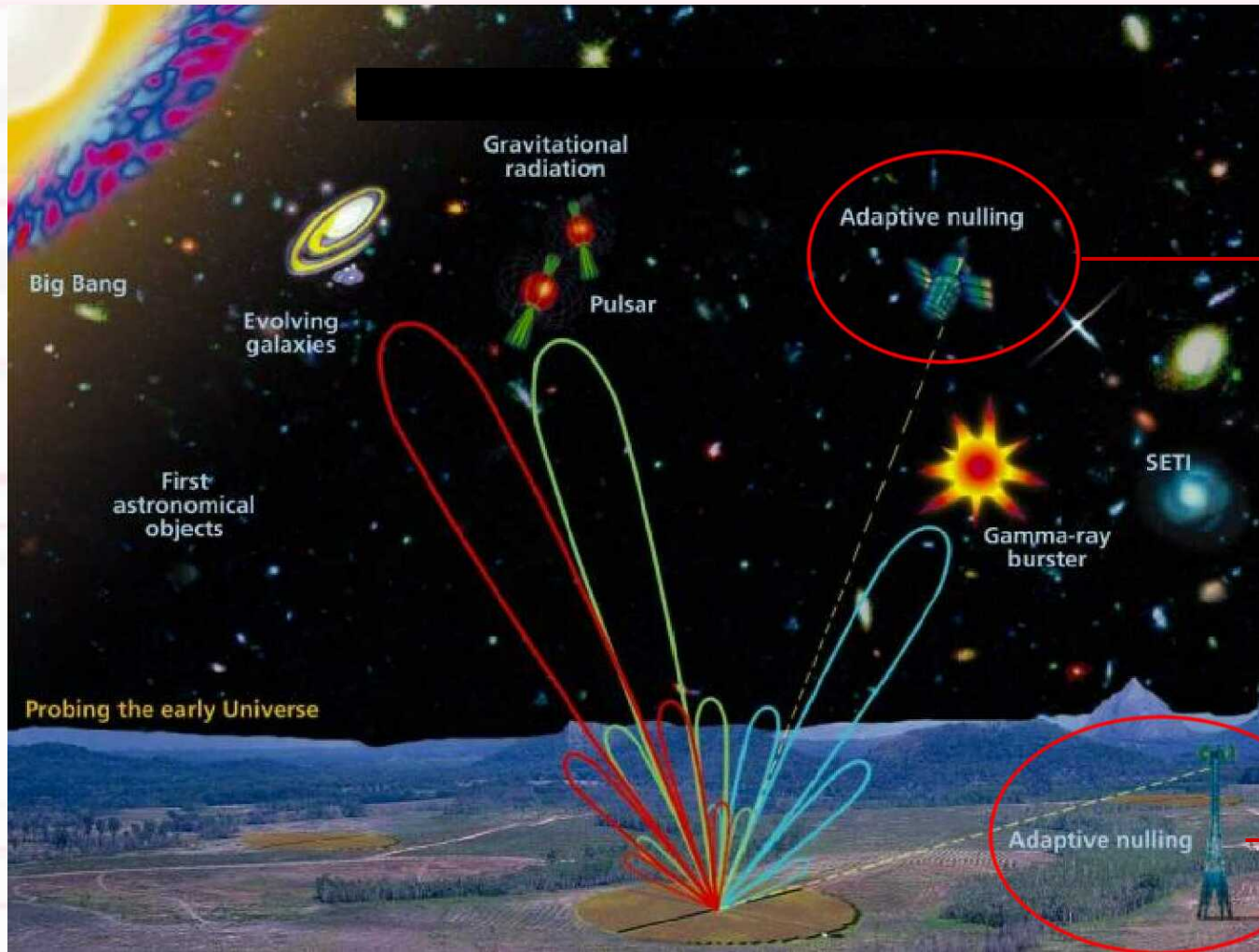
- Organised a *Task Force on Radio Astronomy and the Radio Spectrum*

to study the spectrum use requirements of the astronomy and satellite telecommunications communities, which recommended, *i.a.:*

the consideration of mechanisms to promote co-operation and reduce potential conflict between the interests of both communities, especially at the small number of future high-sensitivity observatories like the SKA,

- including the establishment of “*Controlled Emission Zones*” (based on agreed technical and economic feasibility).

Regulating different kinds of sources of interference



Satellites:
ITU
OECD?

Terrestrial:
National
Administrations

Working towards regulatory protection for the SKA -1

- *Goal: ITU-R Recommendation on Radio Quiet Zones*, to give guidance to national Administrations for their implementation

Failed to get protection requirements of SKA etc. on agenda of WRC-07 at WRC-03, despite support from European and Asia-Pacific regional organisations,

Strong opposition by satellite operators at WRC-03, especially in USA & CAN

Question on Radio Quiet Zones introduced recently at ITU:

- we need to provide input papers for that on past, present & future of RQZs, including the *SKA protection requirements* [need to define them]

input to ITU-R Working Party 7D (radio astronomy)

through national Administrations (→ Regional organisation) → ITU-R WP7D

- coordination through IUCAF

Working towards regulatory protection for the SKA -2

- Need involvement of radio astronomers in certain regions [voting blocks]:

Africa (radio astronomy in RSA only)

Arab countries (no radio astronomy)

Latin/South America (radio astronomy in ARG, BRA, CHI, MEX)

- IUCAF Correspondents

with their national Administrations, representation at regional level

- Follow up on OECD Task Force recommendations:
 - The establishment of a technical forum for planning, designing and manufacturing of new satellite systems and radio telescopes, before their designs become final;
 - Consultations on ways to share real-