

SCIENTIFIC COMMITTEE
ON
FREQUENCY ALLOCATIONS
IUCAF FOR
RADIO ASTRONOMY
AND
SPACE SCIENCE



Another year of IUCAF

Harvey Liszt

Chair

*National Radio Astronomy Observatory**

North American Alma Science Center

Charlottesville, VA

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IUCAF <http://www.iucf.org/>



- Affiliated Body of International Science Council, eventual successor to ICSU <https://council.science/>
- ISC General Assembly in Muscat 01/25
 - Oman has scientific and intellectual ambitions that were not in evidence in Dubai during WRC-23
 - ISC has ambitions for its role as international science advisor, incoming President is Robbert Dijkgraaf, recent Director of IAS and liberal Dutch government minister for science and culture.



IUCAF <http://www.iucaf.org/>



- Three recent retirements
 - Tasso Tzioumis, Masatoshi Ohishi, Wim van Driel
- One death
 - Liese van Zee
- One new member
 - Greg Hellbourg from Cal Tech
- For more background on IUCAF, see my 2022 presentation here at CORF

IUCAF 6th Spectrum Management School

<http://www.iucaf.org/sms2025/>



Observatorio Astronómico Nacional

Alcalá de Henares, Madrid, Spain

29 September - 3 October 2025

- First planned JPL 07/25
 - Europeans balked
- Moved to Spain (500th birthday of Cervantes)
 - Convenient after WP7D
 - Those working in US on visas may not come
- Travel impediments more generally

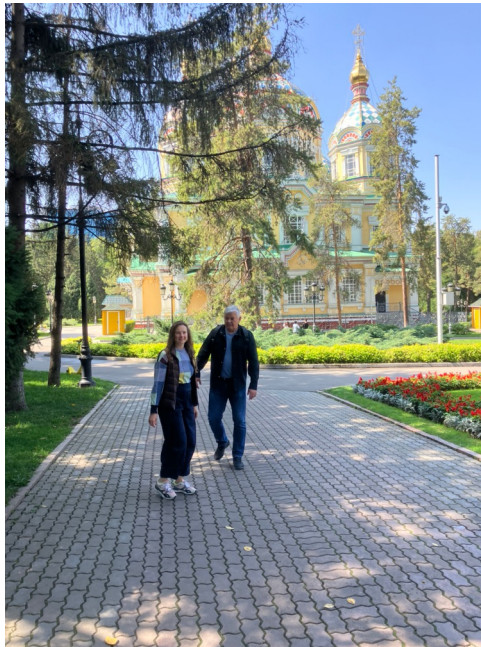
Issues for WRC-27 in Shanghai

[168]	Working document towards a preliminary draft new recommendation - Thresholds of harmful interference to radio astronomy in the shielded zone of the Moon - (Copy to Working Party 7B for information)	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	Q260/7	2025-03-04
[167]	Working document towards a preliminary draft new recommendation - Threshold levels of harmful interference to radio astronomy above 275 GHz	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	Q145/7	2025-03-04
[166]	WRC-27agenda item 1.18 - Draft Revision of Tables 1 and 2 of the Annex to Resolution 739 (WRC-19) - (Copy to Working Party 7C for information)	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.18	2025-03-04
[133]	Accumulation of 2% data losses in the frequency band 15.35-15.4 GHz that is allocated to radio astronomy and other passive services on a primary basis and subject to RR No. 5.340 (copy to Working Party 7D)	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.7	2024-09-19
[94]	Draft reply liaison statement to Working Party 7B (copy for information to Working Parties 1B, 4A, 4C, 5A, 5B, 5C, 5D, 7A and 7C) - Relevant technical information to support studies under WRC-27 agenda item 1.15	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF) , Committee on Radio Astronomy Frequencies	AI1.15	2024-08-30
[92]	Note to the Director (BR)	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF) , Square Kilometre Array Observatory (SKAO)		2024-08-23
[91]	Draft reply liaison statement to Working Party 5C (copy to Working Parties 1A, 4A, 4B, 4C, 5A, 5B, 6A and 7C for information) - Studies under WRC-27 agenda item 1.10	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.10	2024-08-16
[90]	Draft reply liaison statement to Working Party 5B (copy to Working Parties [3J, 3K, 3M,] 4A, 4C, 5A, 5C and 7C for information) - Relevant technical information to support studies in preparation of WRC-27 agenda item 1.8	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.8	2024-08-16
[89]	Draft reply liaison statement to Working Party 4C (copy to Working Parties [3L, 3M,] 4A, 4B, 5A, 5B, 5C, 5D, 6A, 7B and 7C for information) - Technical information to support the studies for WRC-27 agenda items 1.12 and 1.13	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.13 , AI1.12	2024-08-16
[88]	Draft reply liaison statement to Working Party 4C (copy to Working Parties 4A, 4B, 5A, 5B, 5C, 5D, 7B and 7C for information) - WRC-27 agenda item 1.11	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.11	2024-08-16
[87]	Draft liaison statement to Working Party 4A (copy to Working Parties 1B, 3M, 4B, 4C, 5A, 5B, 5C, 5D, 6A, 7B and 7C for information) - WRC-27 agenda item 1.6	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.6	2024-08-16
[86]	Draft reply liaison statement to Working Party 4A (copy to Working Parties 5A, 5C and 7C for information) - WRC-27 agenda item 1.3	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.3	2024-08-16
[85]	Draft reply liaison statement to Working Party 4A (copy to Working Parties 4C, 5A, 5B, 5C, 5D, 7B and 7C for information) - Information to support the studies under WRC-27 agenda item 1.1	Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	AI1.1	2024-08-16
[14]	Working document toward a preliminary draft revision of Recommendation ITU-R RA.1513 - Levels of data loss to radio astronomy observations and percentage of time criteria resulting from degradation by interference for frequency bands allocated to the radio astronomy service on a primary basis	Committee on Radio Astronomy Frequencies , Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	Q226/7 , Q146/7 , Q145/7	2024-03-05

Result: 14 total items

WP 7D in Kazakhstan, 09/24

- Al-maty was very pleasant and quite hospitable
- Parks, trees, running water, fountains everywhere
- Very fresh food (maybe too much horse meat)
- The WP 7D meeting was less pleasurable

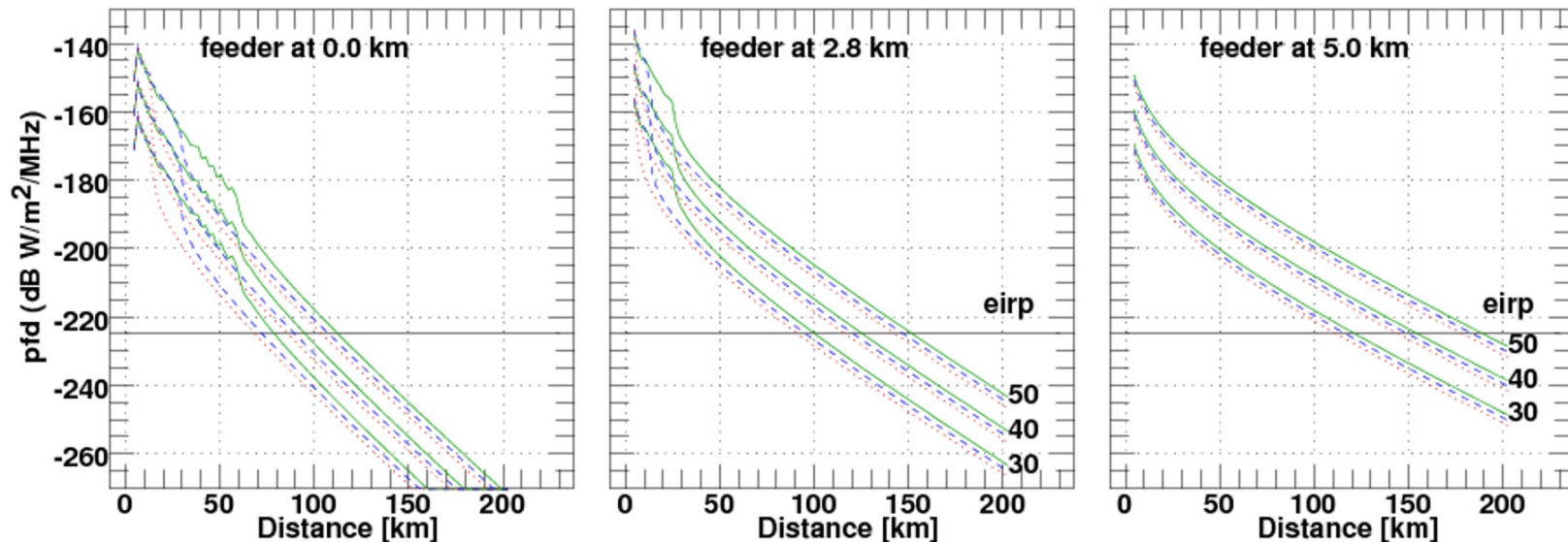


WP 7D in Kazakhstan

- IUCAF prepared drafts of 7 reply liaison statements
 - With the presence of one particular chaos agent from Iran and persistent obstruction by one national delegation, WP 7D was barely able to send replies
 - And they were not properly edited
- Overwhelmed, I've amused myself doing studies on two very small-bore Agenda Items, 1.3 and 1.8

WP 4A (FSS)

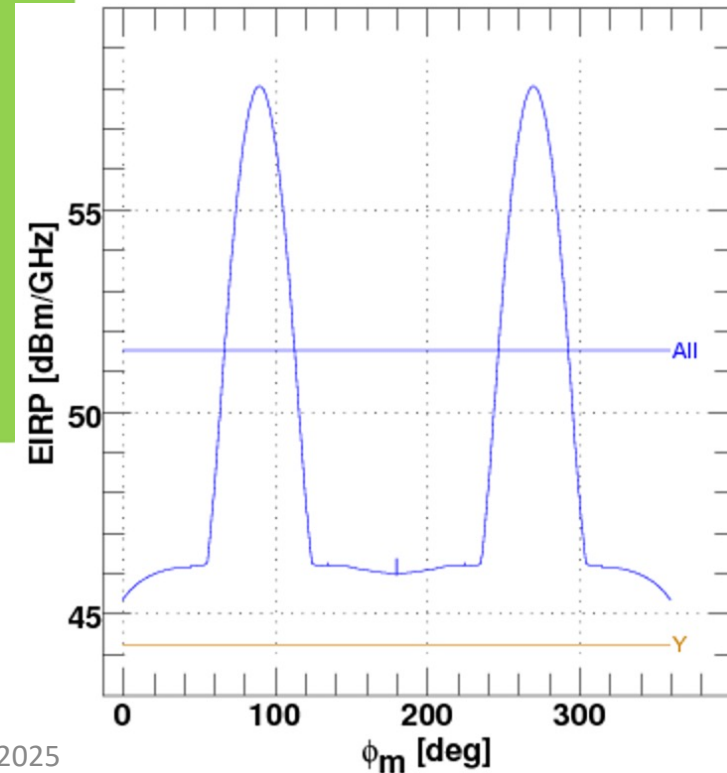
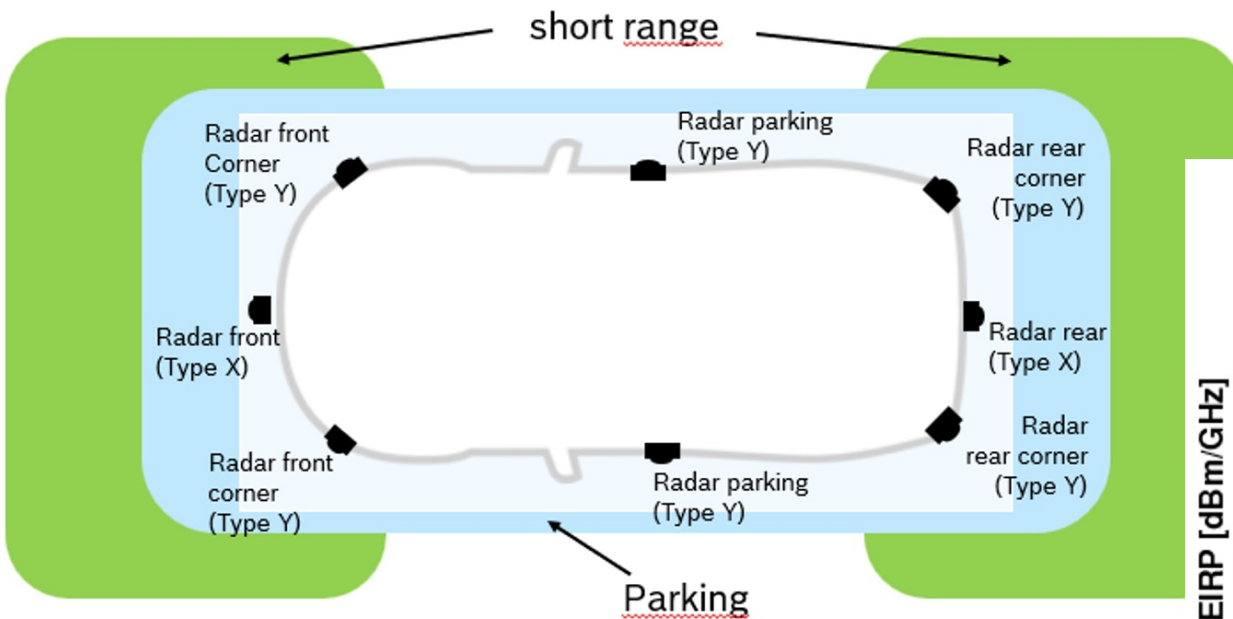
- AI **1.3** 51.4-52.4 GHz nGSO gateway links (E-s)



- Separations similar to the GSO case at WRC-19
 - Atmospheric absorption important
 - We don't observe at ~51 GHz from the ground if at all
 - Alma receivers work there but not synthesis, not in MIFR

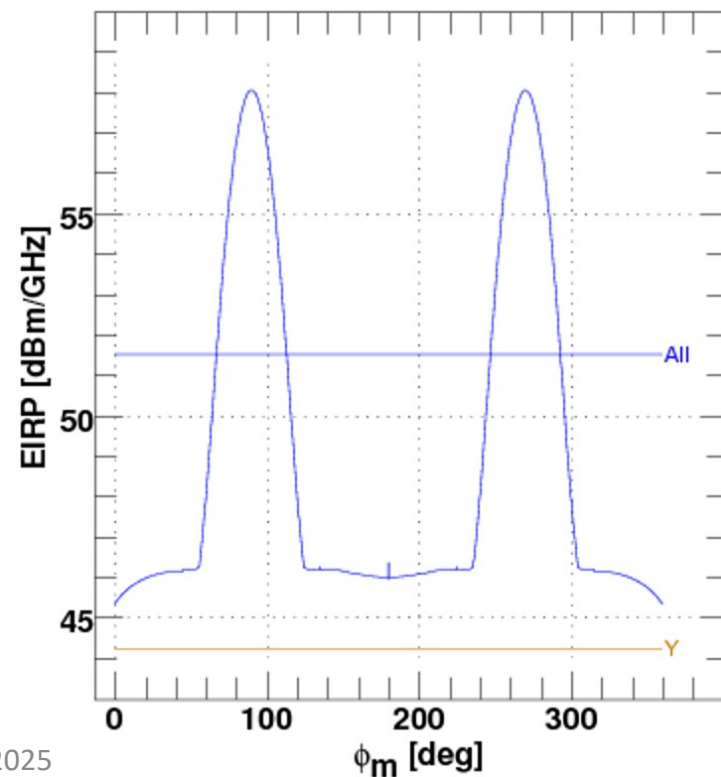
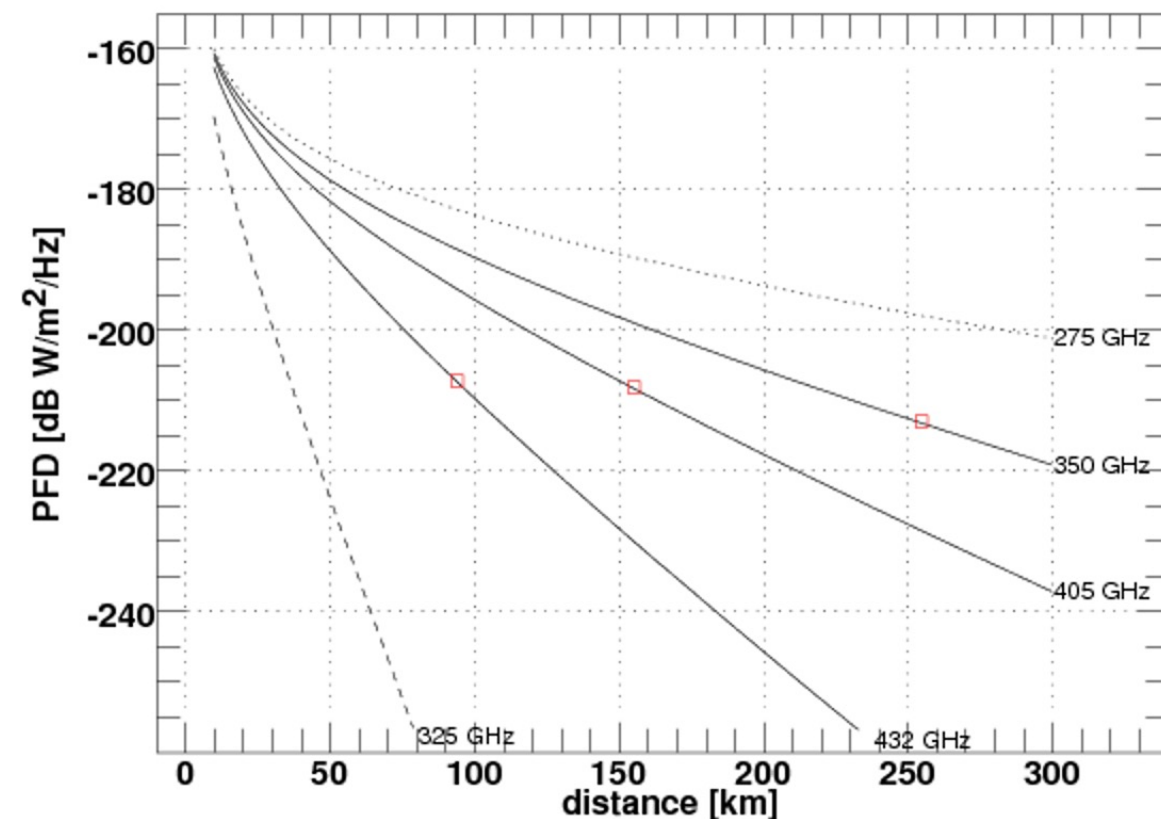
WP 5B (radiodetermination)

- AI **1.8** radiolocation at 231.5 – 275, 275 – 700 GHz



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WP 5B (radiodetermination)

- AI **1.8** radiolocation at 231.5 – 275, 275 – 700 GHz
 - Proponents haven't specified the radar transmitter characteristics in a way that a vehicular radar radiates the amount of power that is applied
 - Was an unresolved issue at WRC-15 for 77.5-78 GHz radar
 - The frequency range for the vehicular radars has been narrowed to 252 – 296 and 356-439 GHz
 - Proponents left mid-way in the current meeting
 - Very little time to submit studies and craft CPM text
 - WP 5A revising Rec. M.2057 with 136 - 148.5 GHz car radar (front, side and rear) following ECC work

WP 5D (IMT)

- AI **1.7** 4.4 – 4.8, 7.125 – 8.4, 14.8 – 15.35 GHz
 - IUCAF tried to inform this AI about the accumulation of ~ 5 separate 2% data loss exceptions for the RAS 5.340 band at 15.35 – 15.4 GHz but was blocked in both WP 7D and WP 5D by one national delegation

WP 4A (FSS)

- AI **1.1** 47.2-51.4 GHz ESIM (E-s)
 - *5.555 Additional allocation: the band 48.94-49.04 GHz is also allocated to the radio astronomy service on a primary basis. 5.340 from airborne platforms*
 - ALMA registered but can't do interferometry above 50.0 GHz

Two issues off-the-WRC books

**Scientific Committee on Frequency Allocations|
for Radio Astronomy and Space Science (IUCAF)**

**WORKING DOCUMENT TOWARDS A
PRELIMINARY DRAFT NEW RECOMMENDATION**

**Threshold levels of harmful interference to radio astronomy
in the shielded zone of the Moon**

**Scientific Committee on Frequency Allocations
for Radio Astronomy and Space Science (IUCAF)**

**WORKING DOCUMENT TOWARDS A PRELIMINARY DRAFT NEW
RECOMMENDATION**

**Threshold levels of harmful interference to Radio Astronomy
above 275 GHz**

Two issues off-the-WRC books

Narrowband threshold values of interference harmful to radio astronomy observations in the SZM

Frequency Hz	Channel bandwidth Δf Hz	Minimum antenna noise temperature T_A Hz	Receiver noise temperature T_R K	System sensitivity (noise fluctuations)		Threshold interference levels		
				Rms noise temperature ΔT ($\Delta t = 1.2 \times 10^6 s$) K	Power spectral density ΔP_S W/Hz	Input power ΔP_H W	Incident pfd $\Delta P_H / (\lambda^2 / 4\pi)$ W/m ²	Spectral pfd S_H W/(m ² - Hz)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
f	f/3x10 ⁵	Eqn A1-1	Table A1-1	$(T_A + T_R) / (1.2 \times 10^6 \Delta f)^{1/2}$	$k_B * \Delta T$	$k_B * \Delta T * \Delta f$	$k_B * \Delta T * \Delta f / [(c/f)^2 / 4\pi]$	$k_B * \Delta T / [(c/f)^2 / 4\pi]$

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Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)

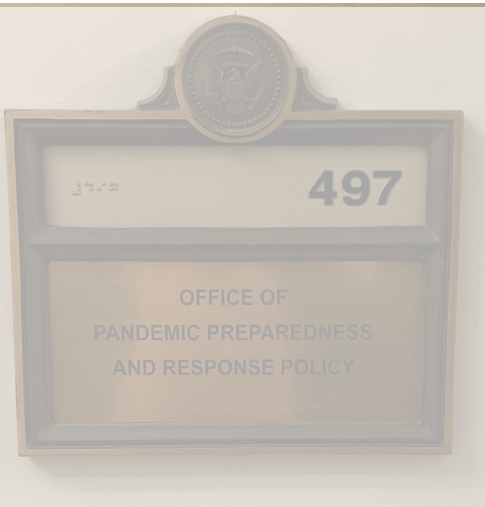
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**Threshold levels of harmful interference to Radio Astronomy
above 275 GHz**

2024: Thanks for inviting me and let's just hope we're all in one piece next year



2025: And here we are



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As bird flu continues to spread administration sidelines key pandemic preparedness office

(CNN) — The Trump administration has not staffed an office established by Congress to prepare the nation for future pandemics, according to three sources familiar with the situation.

The White House Office of Pandemic Preparedness and Response Policy was established by Congress in 2022 in response to mistakes that led to a flat-footed response to the Covid-19 pandemic.

The office, called OPPr, once had a staff of about 20 people and was orchestrating the country's response to bird flu and other threats until January 20, including hosting regular interagency meetings to share plans.

"We did it very much behind the scenes," said Dr. Paul Friedrichs, a physician and retired Air Force major general who was director of OPPr during the Biden administration.