

Consultative Committee for Acoustics, Ultrasound and Vibration -CCAUV

President: Dr Takashi USUDA
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Bureau
International des
Poids et
Mesures



26^e CGPM

Versailles

13-16 novembre 2018



The need for a global forum for Acoustic Ultrasound Vibration

- ◆ Because it's a wide ranging quantity

in frequency 0.1 Hz to 20 MHz
 10^8 magnitude

88 piano keys
27.5 Hz to 4.19 kHz



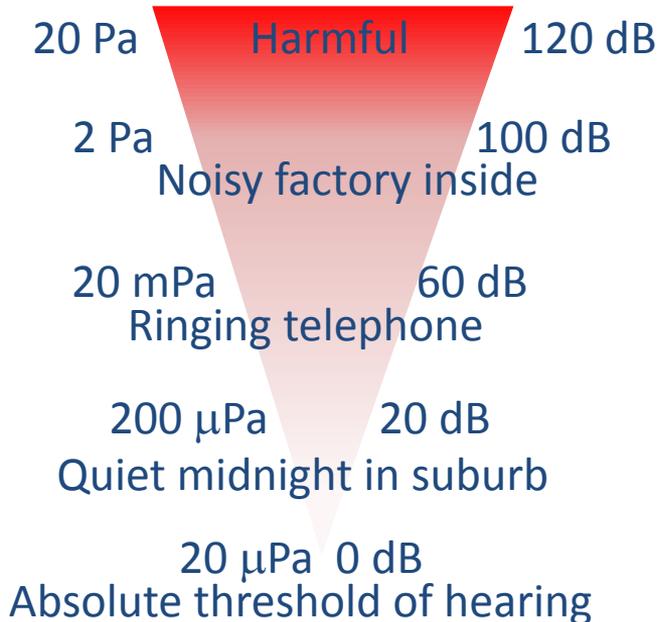
20 Hz-20 kHz audible to human

0.1 Hz – infrasound and seismic motion

150 Hz-150 kHz Dolphin perception

Diagnosis, treatment -20 MHz

in intensity level 20 μ Pa to 20 Pa
 10^6 magnitude



The need for a global forum for Acoustic Ultrasound Vibration

- ◆ Because it's a creation engine for innovation

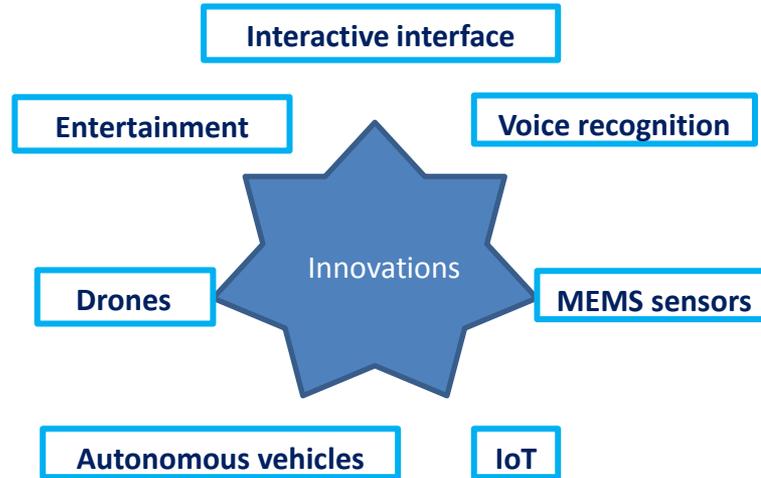


A 6DOF micro-vibration measurement/generation test facility (NPL)



www.bipm.org

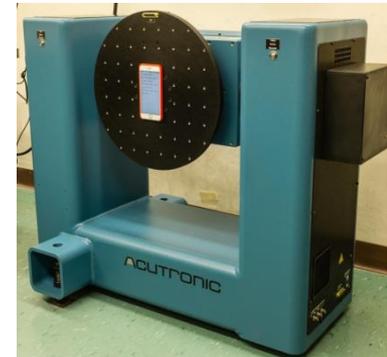
Long-stroke shaker for seismometer calibration (NM)



Transducer characterization under various range, mode and magnitude



Angular vibration calibration (PTB)



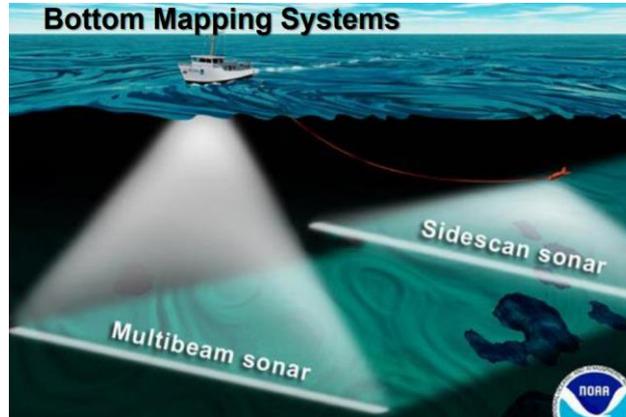
2 ½ DoF position and rate table with Smartphone (NIST)

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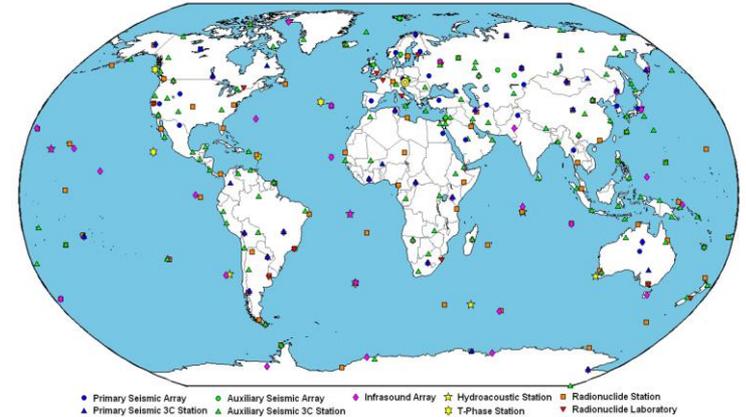
- ◆ Because regional to global level environmental monitoring is needed



Wind turbine noise
(APMP report)



Marine Geophysical Surveys
(image: NOAA)



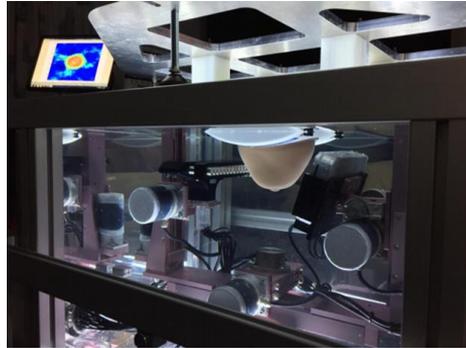
Seismic, infrasound, hydrophone
International Monitoring System
(IMS) for the Comprehensive
Nuclear-Test-Ban Treaty (CTBTO)

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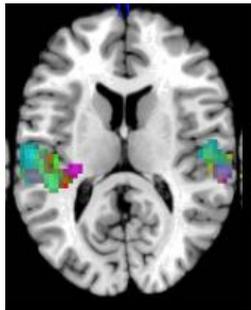
- ◆ Because global comparability for safety and health should be secured



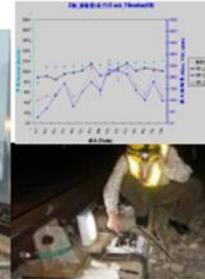
Audiogram



Ultrasonic Computed Tomography for breast cancer diagnosis (NPL)



Noise perception (PTB)



Vehicle monitoring (photo CMS/ITRI)



Noise protection Hand arm, whole body vibration protection



Crash testing (Photo: Japan Automotive Research Institute)

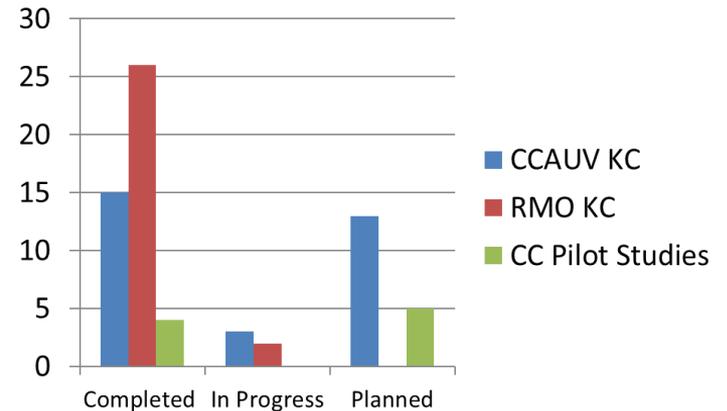
Facts about the CCAUV

- ◆ Establishment of the CCAUV

Adopted at the 87th CIPM meeting in 1998 and held the 1st CCAUV meeting in 1999

Consensus : To meet CIPM MRA requirements

- ◆ 18 members, 12 observers, 2 liaisons with international standardization bodies.
- ◆ One plenary meeting every 2 years
- ◆ KC plan and cycle are published in our strategic document
- ◆ CMC: 1174 CMCs of which 870 are linked to a KC supported by the CCAUV



Governance of the CCAUV

- ◆ CCAUV Working Groups

 - Working Group for Key Comparisons (CCAUV-KCWG)*

 - Consistent implementation of the requirements of the CIPM MRA in terms of comparisons*

 - Working Group for RMO Coordination (CCAUV-RMOWG)*

 - Harmonize inter RMO issues such as review criteria*

 - Working Group on Strategic Planning (CCAUV-SPWG)*

 - Identify and monitor the needs and developments in AUV, propose strategic document*

- ◆ Strategic plan for 2017 to 2027 was adopted and published at the plenary meeting in 2017
- ◆ KC planning : The planning process for KCs involves careful deliberation to optimize resource requirements needed to respond to the needs of its stakeholders. Repeat KCs are planned 10-year cycle

Other activities related to the CCAUV

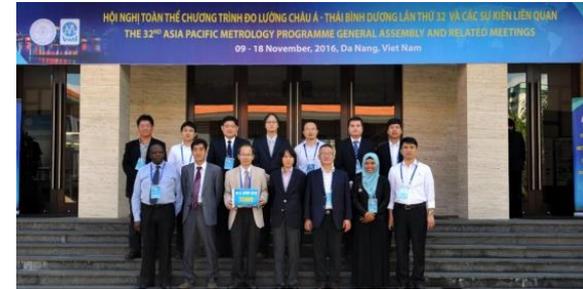
- ◆ *Metrologia* Focus Issue on “Metrology for Dynamic Measurements”
- ◆ Adopted open access policy : <https://www.bipm.org/en/committees/cc/ccauv/>
- ◆ Regional activities



TCAUV Euramet



TCAUV Coomet



TCAUV APMP



Technical visit
and training



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