WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

CIMO TECO-2018 highlights -

Towards fit-for-purpose environmental measurements

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(WMO Secretariat)

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

(Tokyo, Japan, 6 - 9 March 2019)

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RA II WIGOS Workshop on RWCs and its services for Members

The 2018 WMO/CIMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (CIMO TECO-2018)

"Towards fit-for-purpose environmental measurements."

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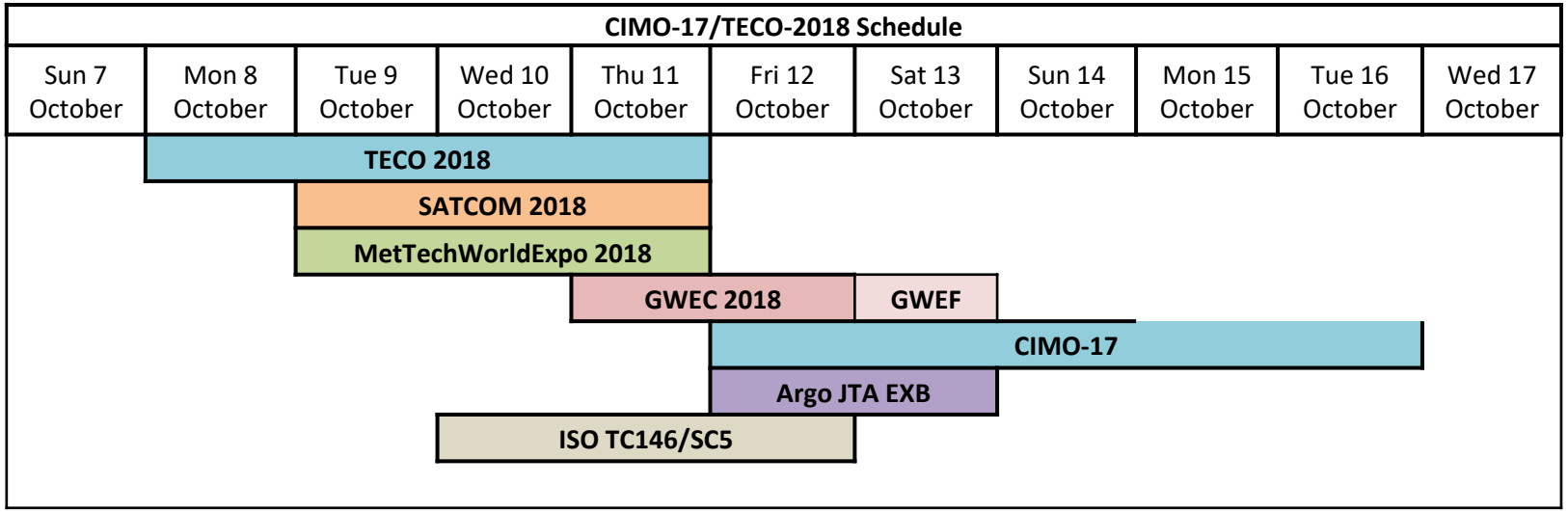
Tokyo, Japan, 6 - 9 March 2019

CIMO TECO – 2018 & other events

(Amsterdam, the Netherlands)



TECO-2018: Technical Conference on Meteorological and Environmental Instruments and Methods of Observation

Theme: "***Towards fit-for-purpose environmental measurements.***"

SATCOM: International Forum of Users of Satellite Data Telecommunication Systems

MetTechWorldExpo: Meteorological Technology World Exhibition, organized by UKi

GWEC/F: Global Weather Entreprise Conference/Forum

CIMO-17: Seventeenth Session of Commission for Instruments and Methods of Observation

Argo JTA EXB: Argo Joint Tariff Agreement (JTA) is a sub group of Satcom Forum. JTA executive board(JTA EXB)

ISO TC146/SC5: Meteorology: Meeting of ISO working working groups on lidars and wind profilers

CIMO TECO-2018 was for:

- experts in instruments and methods of observation from NMHSs, research institutes and the private sector,
- exchange of experience and achievements in operational measurement practices, as well as in the latest developments in instrumentation, observing systems and related services.
- direct interaction with manufacturers of meteorological and other related instruments and systems, as well as for training and capacity development.

Overall statistics

Total number: 173 presentations

1) **Characterization and standardization of environmental measurements – traceability assurance:** 13 OPs + 35 PPs = 48
2) **Emerging measurement technologies: from development to operation:** 13 OPs + 31 PPs = 44
3) **Sustainability of the measurements:** 13 OPs + 34 PPs = 47
4) **Measurement and integration challenges in the next 20 years:** 9 OPs + 14 PPs = 23
5) **Achievements of the CIMO Experts teams:** 6 PPs
6) **Joint CIMO TECO-2018 & GWEC session:** 5 OPs

> 400 participants

Discussion sessions

PANEL DISCUSSION SESSION 1:
New data sources (measurements from mobile phones, vehicles, drones, MW links, etc.) – experiences, challenges and characterization

PANEL DISCUSSION SESSION 2:
Experiences with AWS tender specifications: how useful was it, potential improvement and extension to other type of instrumentation (what should be next?)

CIMO TECO/GWEC PANEL DISCUSSION SESSION:
Together, how do we tackle the challenges: data quality and traceability, and sustainability of measurements?

PROF DR VILHO Väisälä AWARDS

1) Outstanding Research Paper on Instruments and Methods of Observation:

Improved analysis of solar signals for differential reflectivity monitoring (Asko Huuskonen, Mikko Kurri, and Iwan Holleman)

2) Development and Implementation of Instruments and Methods of Observation in Developing Countries:

A continuously weighing, high frequency sand trap: Wind tunnel and field Evaluations (Fan Yang, XingHua Yang, Wen Huo, Mamtimin Ali, XinQian Zheng, ChengLong Zhou, Qing He)

Special session:

WMO governance reform, strategic planning and partnerships (followed by discussion)

Prof. Petteri Taalas
WMO Secretary – General

Proceedings and recordings

Posters and presentations from CIMO TECO-2018, compiled as an **Instruments and Observing Methods Report, No. 132**, (IOM-132), are accessible from: https://library.wmo.int/index.php?lvl=notice_display&id=20734#.XHkJc65KuUl

Video recordings will be available soon from: https://www.wmo.int/pages/prog/www/IMOP/publications-IOM-series.html

CIMO-TECO-2018

8-11 October 2018
Amsterdam, the Netherlands

PANEL DISCUSSION SESSION 1:

New data sources (measurements from mobile phones, vehicles, drones, MW links, etc.) – experiences, challenges and characterization

Some outcomes of the Discussion Session 1 (CIMO-TECO-2018)

Examples of new data sources:

- Cellular (Smart) phones;
- Human driven or autonomous vehicles;
- Drones;
- Microwave links;
- Stationary and mobile camera imagery;
- Tagged and instrumented sea (land?) animals;
- Social media - Twitter, YouTube, Facebook, etc.

Some outcomes of the Discussion Session 1 (CIMO-TECO-2018)

- < 5 % of the participants is using already new data sources;
- < 2 % of the participants is achieving good results from new data sources or are ingesting them into models or automated forecasting systems.

Some outcomes of the Discussion Session 1 (CIMO-TECO-2018) cont'd

Concerns:

- Lack of information about performance/quality (traceability?);
- Exposure of the instruments is often unknown;
- There are no metadata;
- Measurement uncertainties are usually unknown;
- What is reliability of the available data;
- Data amounts usually too big for traditional processing;
- Problem with ownership and privacy of the data;

Some outcomes of the Discussion Session 1 (CIMO-TECO-2018) cont'd

Possible opportunities:

- Rapidly evolvement;
- Cheaper, quicker, more spatial and temporal data;
- Possibly built on existing infrastructure;
- Usually no operation and maintenance costs;
- Could be a combination of multiple data sources;
- Could be used to extend reference data sources to uncovered areas;
- Data can be purchased by subscription with no equipment ownership.

Some outcomes of the Panel Discussion Session 1 (CIMO-TECO-2018) cont'd

To be considered for a way forward:

- Partnership on educating and informing about measurements;
- Implementation of new management processes to allow agility;
- Investment in machine "learning" systems to handle high data volumes;
- Evaluation of the implications and risks of using new data sources.
- Instrument intercomparisons;
- Data policy.

CIMO-TECO-2018

8-11 October 2018
Amsterdam, the Netherlands

Panel Discussion Session 2:

Experiences with AWS Tender Specifications: how useful was it, potential improvement and extension to other type of instrumentation (what should be next?)

The generic Automatic Weather Station (AWS) Tender Specifications

- **a set of documents intended to support the tendering for AWSs;**
- **documents are based on and are in line with the WMO guidance documentation;**
- **documentation is neutral with respect to manufacturers.**

Some outcomes of the Panel Discussion Session 2 (CIMO-TECO-2018)

- typical timeframes to procure AWS were in the order of 1-2 years;
- no NMHS has yet used the AWS Tender Specifications documents to run a tender;
- inclusion of Lifecycle Management in AWS Tender Specification was particularly welcomed;
- the documentation should be updated to the relevant BUFR/TDC codes;

Some outcomes of the Panel Discussion Session 2 (CIMO-TECO-2018) (cont'd)

- to ensure that Donor and Funding Agencies be advised of the documentation;
- to ensure the Procurement Process is in accordance with World Bank Policies;
- to extract the components relevant to an Application Area;
- to translate the documentation into other official WMO languages;
- to expand the documentation on radiosondes, radars and tidal gauges.

The generic Automatic Weather Station (AWS) Tender Specifications - status

- The documentation **is not formally approved yet**, neither by WMO nor by HMEI.
- 1st priority is to get **feedback from Members** on their experiences with this documentation in order to:
  - ensure that it meets their expectations, and
  - to identify possible ways of improving it.
- The documentation is available at WMO/IMOP website, since June 2018:

https://www.wmo.int/pages/prog/www/IMOP/AWS_Tender_Spec/AWS_Tender_Spec.html

NEED FOR FEEDBACK

YOU ARE KINDLY INVITED TO:

- use and test the documentation as a base for your tendering processes;
- provide us with a feedback on its suitability for your use;
- advise us on how the documentation could be improved to meet your expectations;
- for any guidance, do not hesitate to contact us.

Contacts: iruedi@wmo.int or kpremec@wmo.int.

CIMO TECO-2018 Feedback survey

Results:

- >75 % of respondents attended all 4 days;
- 88 % respondents found duration of 4 days just right;
- 55 % of respondents just came along and listened to;
- 64 % are members of NMHSs; 8 % of HMEI, …
- Quality of the CIMO TECO-2018 scientific and technical papers was excellent for 56 % and average for 44 % respondents.

CIMO TECO-2018 Feedback survey (cont'd)

Quality of the topics

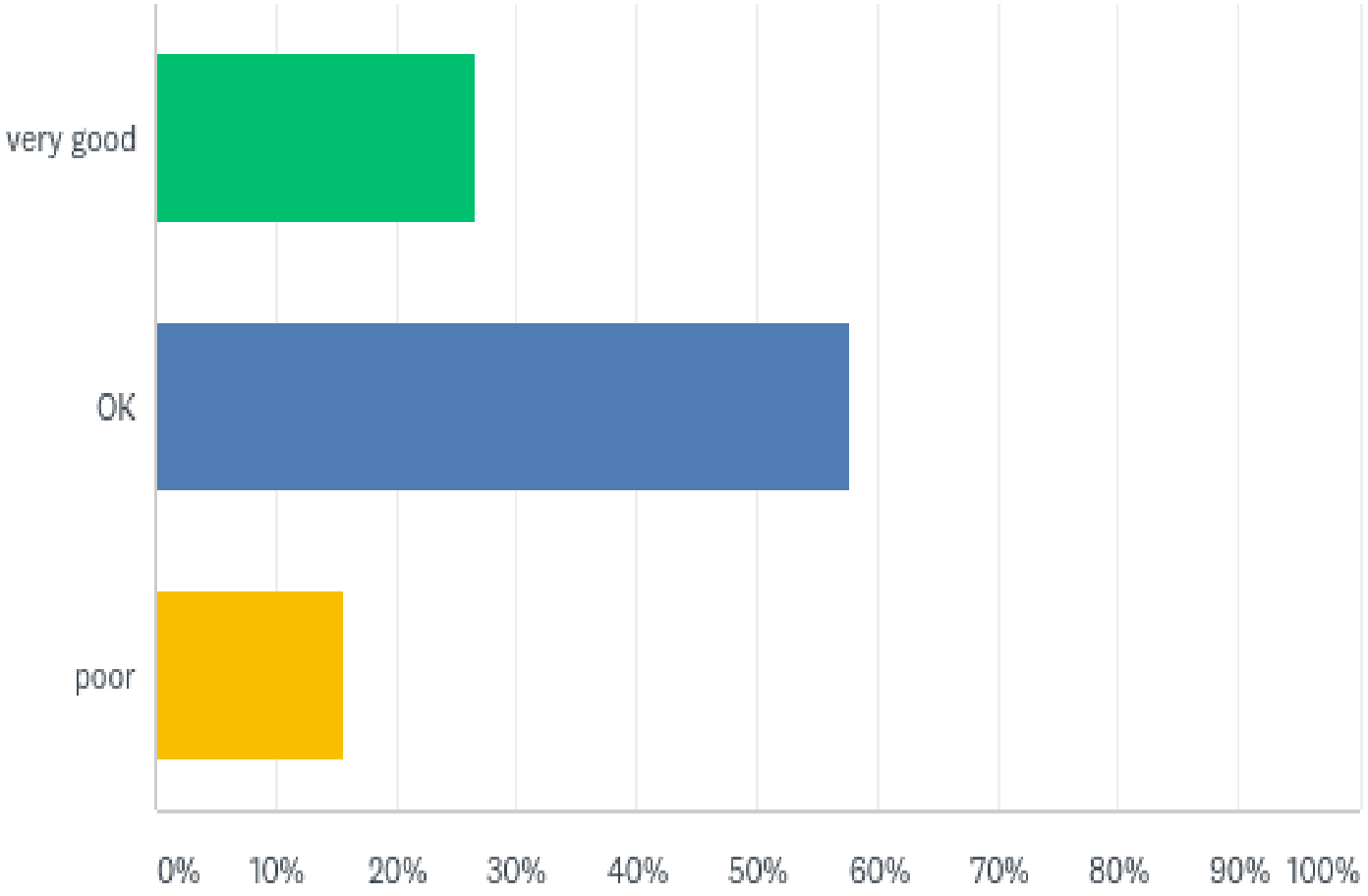
Topic	Excellent	Average	Poor
1	62 %	38 %	0
2	52 %	47 %	1 %
3	54 %	46 %	0
4	46 %	53 %	1 %

CIMO TECO-2018 Feedback survey (cont'd)

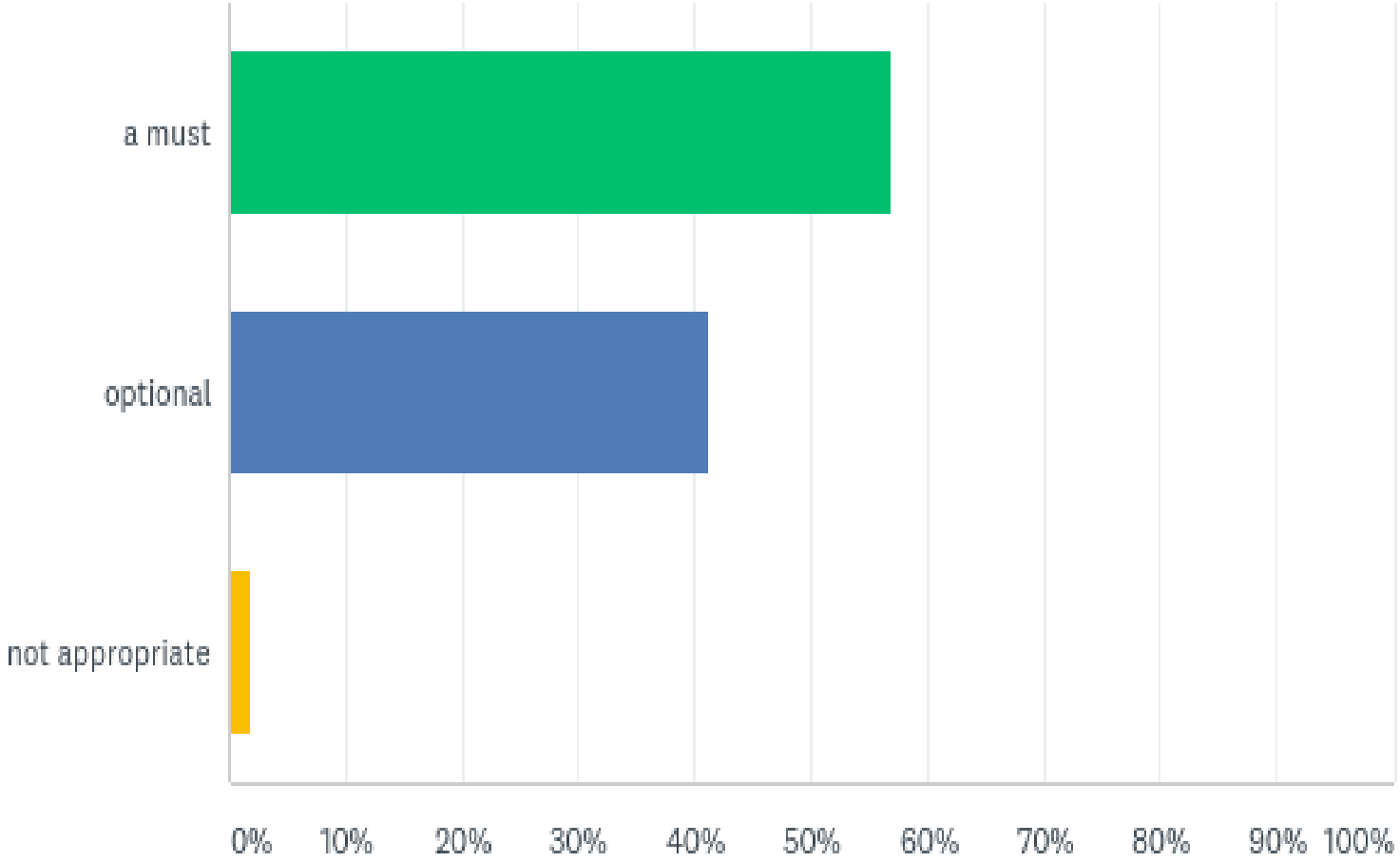
Discussion sessions

	Excellent	Average	Poor	Not attended
1	39 %	43 %	5 %	13 %
2	30 %	39 %	8 %	23 %
3	30 %	37 %	2 %	31 %

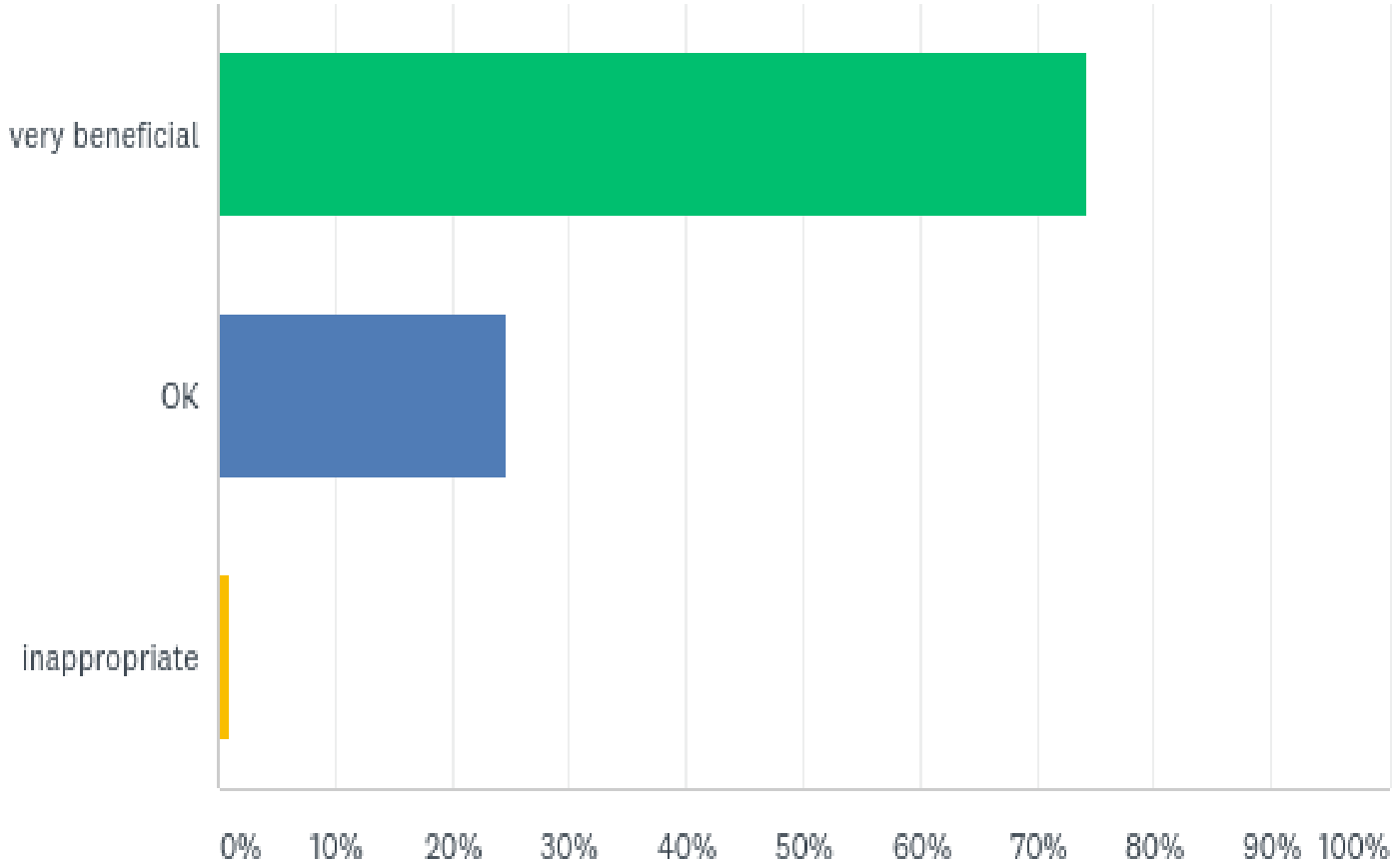
You found 1-minute oral presentations of the posters to be:



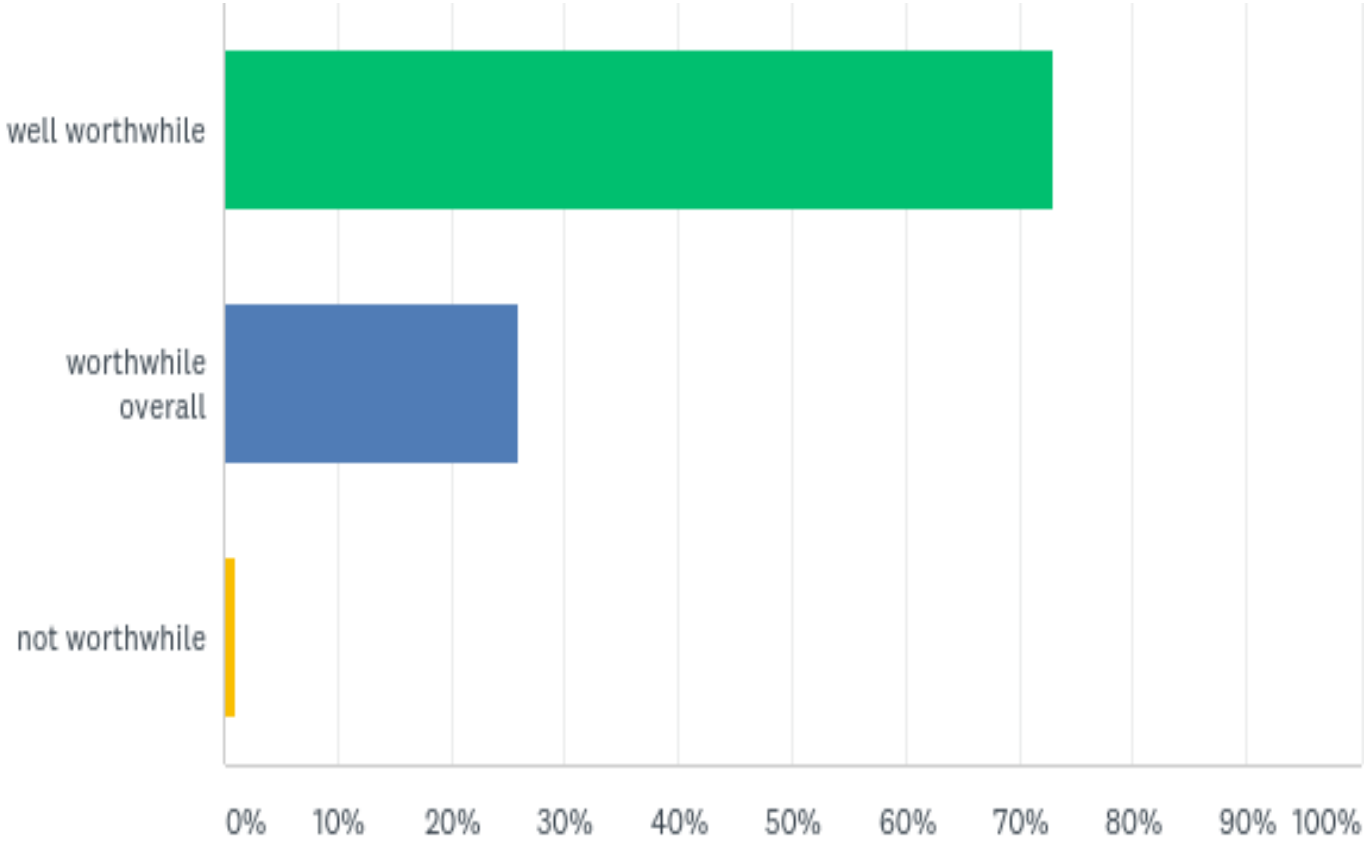
Poster session with wine and cheese at the next CIMO TECO is:



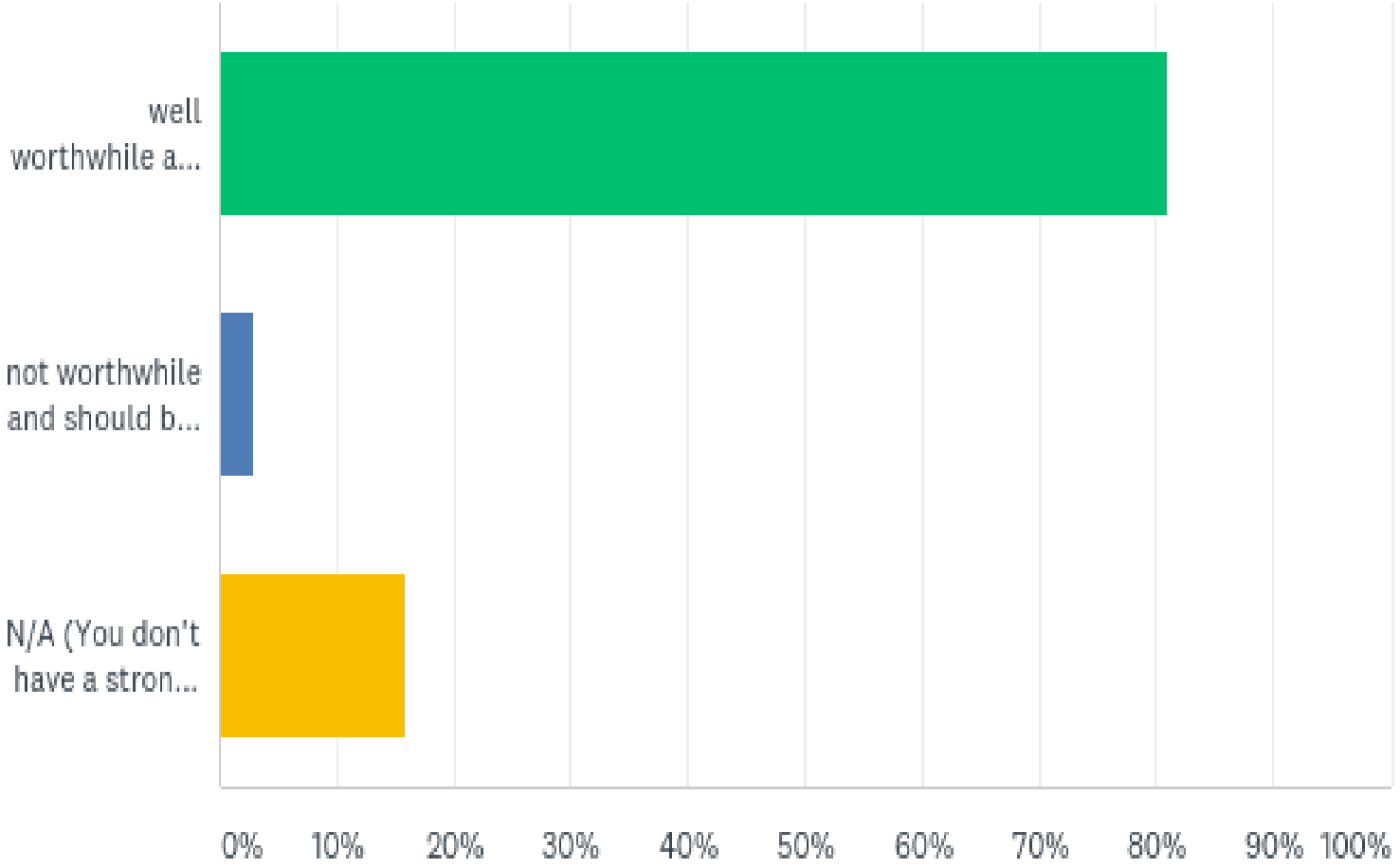
Having CIMO TECO in conjunction with Meteorological Technology World Expo is:



Participation at CIMO TECO-2018 was:



Publication of CIMO TECO conference proceedings comprising extended abstracts is:



Proposed new topics

- Experiences with CIMO classification schemes;
- Metrology including in-field calibration ;
- Crowdsourcing and IoT related topics;
- Experiences with Public-Private Engagement;
- Experience of success network management;
- New and emerging data sources;
- Meteorological big data and related software
- Observations and machine learning,
- More topics related to aviation and agro meteorology;
- Instrument uncertainties.

Proposed topics for discussion sessions

- Social application of observation data;
- Experiences with AWS tender specifications;
- New data sources and future measurement requirements;
- Transitioning from manual to full automation of observation;
- Ensuring homogeneous long-term climatological records in an era of rapid change in instrument technologies;
- How to ensure free availability of meteorological data;
- Calibration procedures in laboratory or in situ;
- Measurements in the urban environment;
- Non meteorological measurements: cryosphere, aerology and marine;
- Discussion on satellite based information and how to asses its quality/trust.

CIMO TECO Future

Recommendation 9 (CIMO-17)

Technical Conferences on Meteorological and Environmental Instruments and Methods of Observation

CIMO:

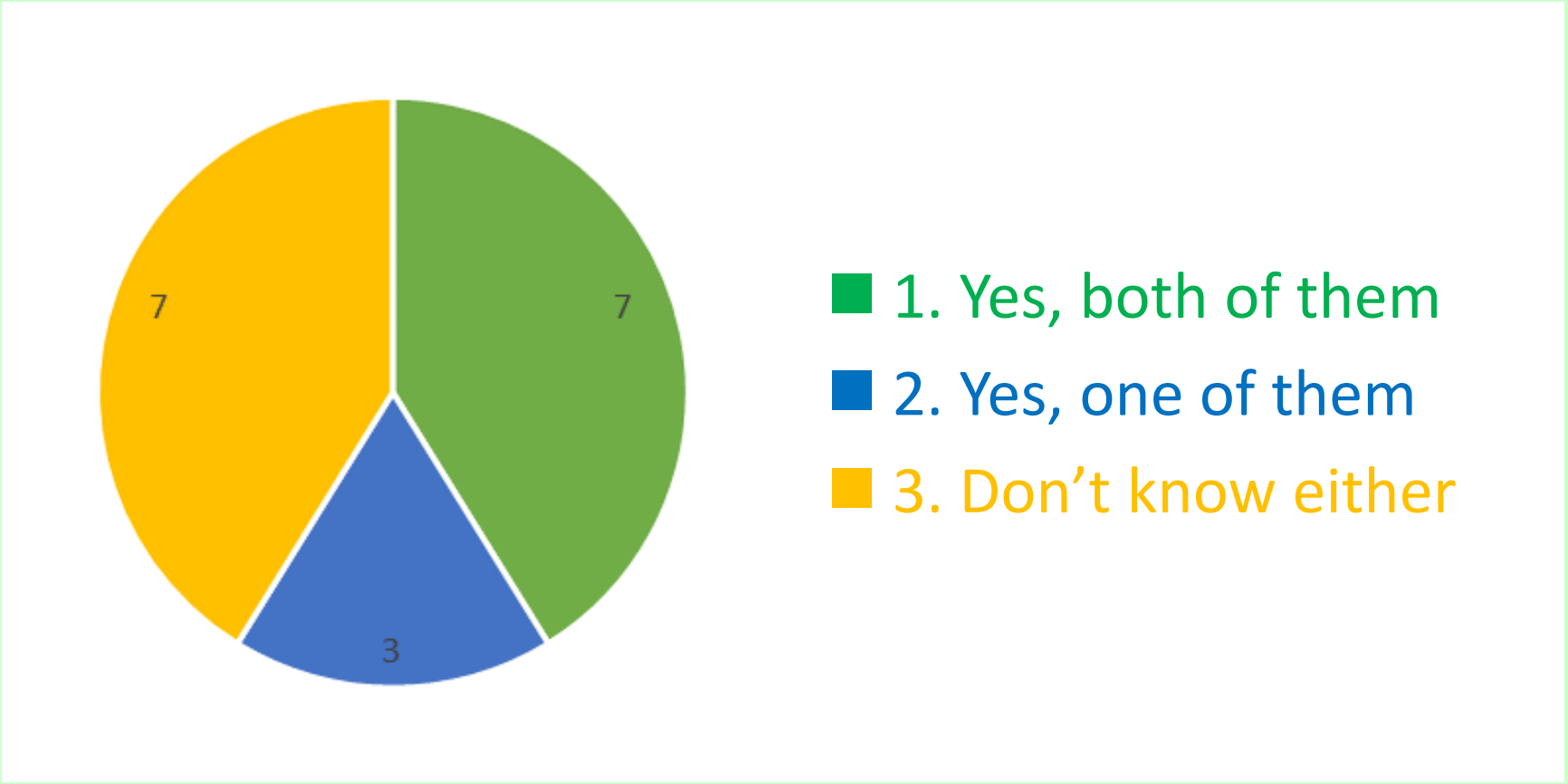
Decides to organize the next **CIMO TECO in 2020**;

Recommends that this series of conferences be continued, independently of the WMO governance reform process, on the same biennial basis;

Requests the Secretary-General to ensure appropriate support and make the necessary arrangements for these conferences.

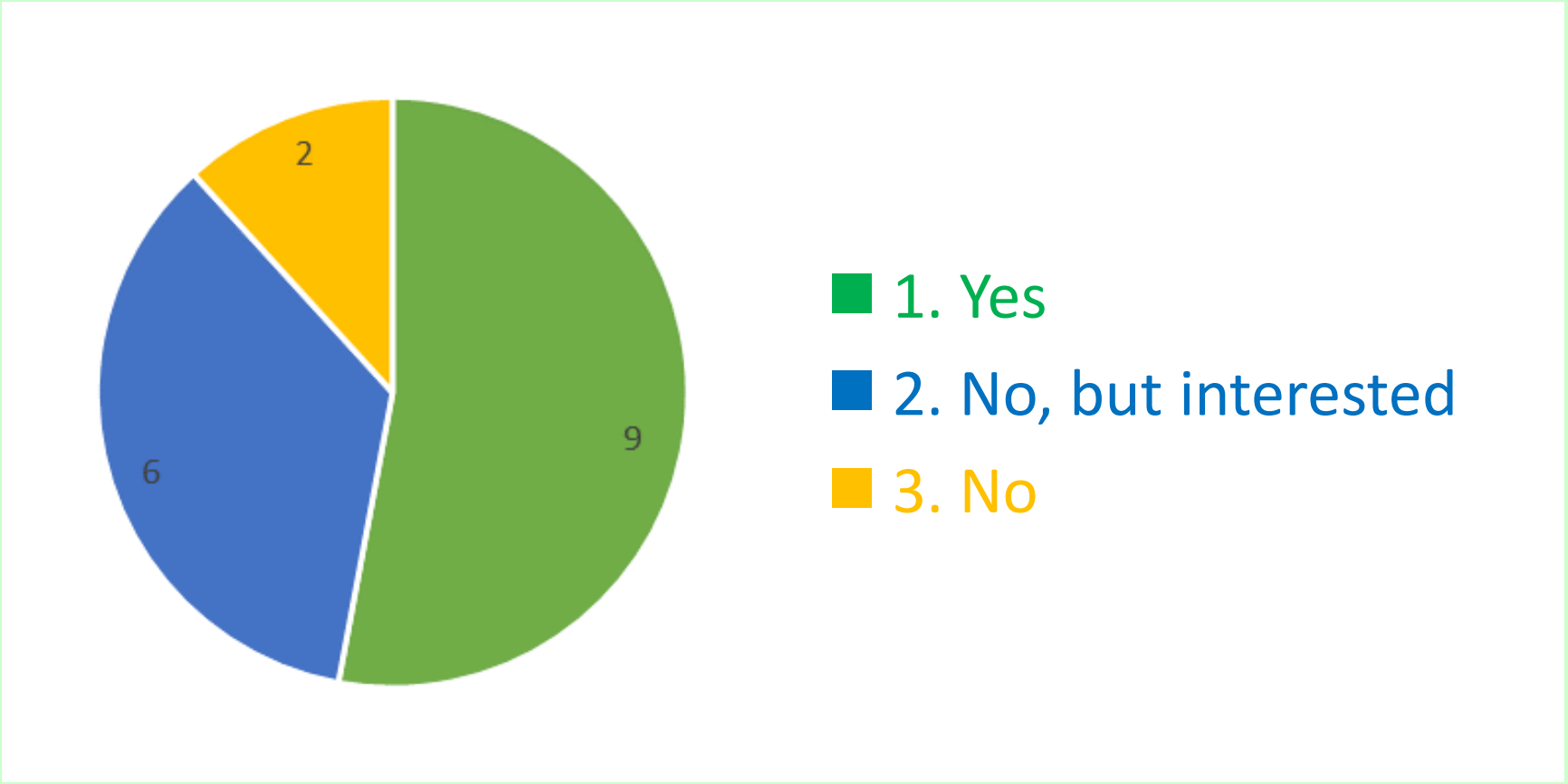
JMA – Questionnaire Survey on the Workshop Contents [2.1]

Q2.1-1 Do you know the keywords “fit-for-purpose measurements” and/or “new data sources” raised at WMO/CIMO TECO-2018?



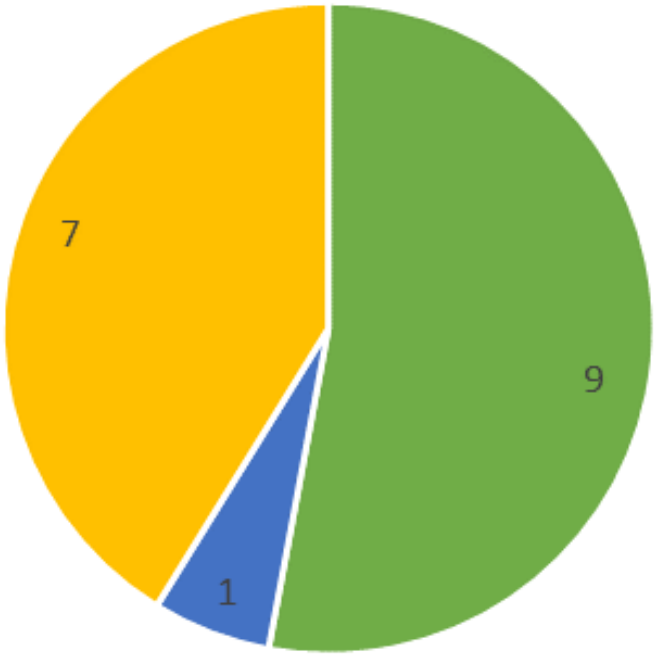
Presenter’s comments: Both terms are well known, at least colloquially, but their precise definition in the WMO regulatory/ guidance documentation would help to understand them better.

Q2.1-2 Do you know that Meteorological Technology World Expo (MTWE) has been organized in parallel with TECO?



Presenter's comments: Although some respondents were not aware of it, model of joint MTWE and CIMO TECO events has been already proven as very beneficial and should be continued.

Q2.1-3 Are you planning to participate in WMO/CIMO TECO-2020?



1. Yes
2. No
3. Don’t know

Presenter’s comments: Workshop participants are encouraged to take part in the next WMO/CIMO TECO, tentatively scheduled for late September 2020, in Paris, France.

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Thank you
Merci

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