CMCC - SISC WEBINAR

December 18, 2018 - h. 12.30 pm CET

IPCC Special Report on impacts of global warming of 1.5°C: An overview of the main outcomes

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MISSION

To investigate and model our **climate system** and its interactions with **society** to provide reliable, rigorous, and timely **scientific results**, which will in turn stimulate sustainable growth, protect the **environment**, and **develop science driven** adaptation and **mitigation policies** in a **changing climate**

cmcc
Centro Euro-Mediterraneo sui Cambiamenti Climatici

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Impacts on Agriculture, Forests and Ecosystem Services (IAFES)

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Ocean Predictions and Applications (OPA)

Risk Assessment and Adaptation Strategies (RAAS)

REgional Models and geo-Hydrological Impacts (REMHI)

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IPCC Special Report on impacts of global warming of 1.5° C: An overview of the main outcomes

Marco Bindi and Lorenzo Brilli

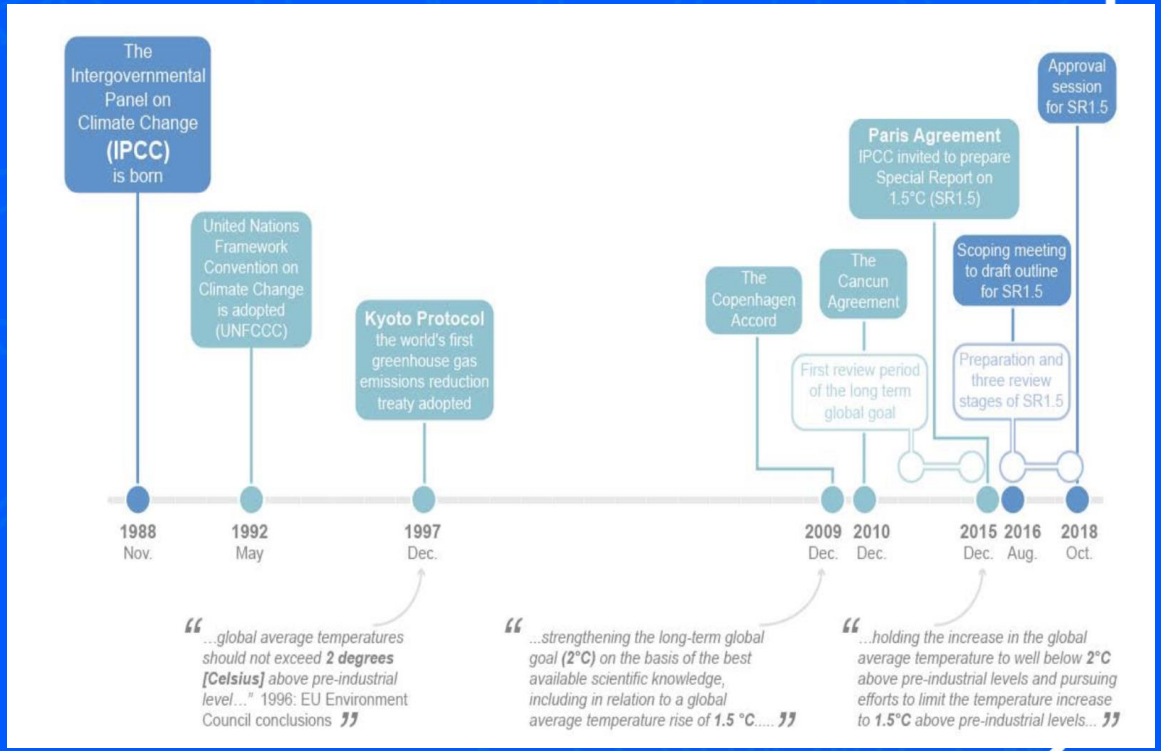
University of Florence and CNR-Ibimet

Why and since are we talking about 1.5° C?

2010: ***The Cancun Agreement was the first UNFCCC document to mention a limit to global warming of 1.5° C "…***strengthening the long term global goal on the basis of the best available scientific knowledge … to a global average temperature rise of 1.5° C"

2015: The final report of the SED2 at the ***COP21 in Paris*** concluded that:

- "***in some regions and vulnerable ecosystems, high risks are projected even for warming above 1.5° C***"
- "While ***science on the 1.5° C warming limit is less robust, efforts should be made to push the defence line as low as possible***"



IPCC SR1.5

As part of the decision to adopt the Paris Agreement, the IPCC was invited to produce, in 2018, a Special Report on ***global warming of 1.5° C above pre-industrial levels and related global greenhouse gas emission pathways.***

The IPCC accepted the invitation, adding that the Special Report would look at these issues in the context ***of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.***

Report: numbers, timeline and outline

Numbers:

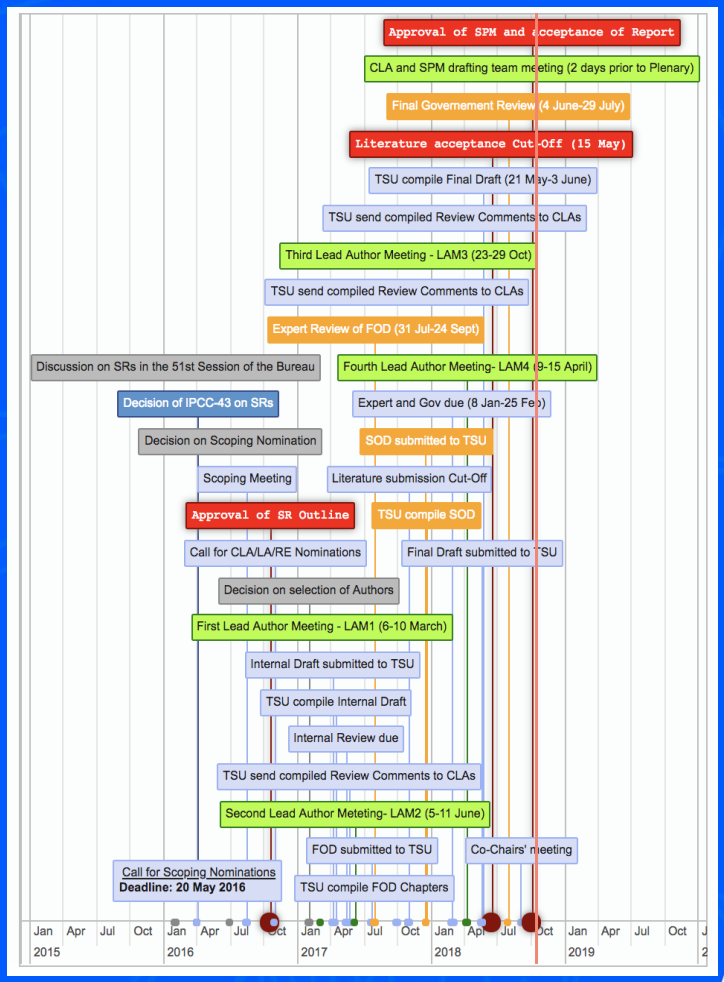
- 91 authors from 40 countries
- 133 Contributing authors (CAs)
- Over 6,000 cited references
- A total of 42,001 expert and government review comments:
  - First Order Draft 12,895;
  - Second Order Draft 25,476;
  - Final Government Draft: 3,630

Outline:

- **Chapter 1:** *Framing and Context*
- **Chapter 2:** *Mitigation pathways* compatible with 1.5° C in the context of sustainable development
- **Chapter 3:** *Impacts of 1.5° C global warming* on natural and human systems
- **Chapter 4:** Strengthening and implementing the *global responses* to the threat of climate change
- **Chapter 5:** *Sustainable development*, *poverty* eradication, and reducing *inequalities*

Timeline:

- **From March 2017 (First LAM) to October 2018 (Approval)**



Key-messages: from press release

- "…***we are already seeing the consequences of 1° C of global warming*** through more extreme weather, rising sea levels and diminishing Arctic sea ice….." Panmao Zhai, Co-Chair of IPCC Working Group I
- "…***every extra bit of warming*** matters, especially since warming of 1.5°C or higher ***increases the risk associated with long-lasting or irreversible changes***" Hans-Otto Pörtner, Co-Chair of IPCC Working Group II
- " …***the decisions we make today are critical in ensuring a safe and sustainable world for everyone***, and ***the next few years are probably the most important in our history***…" Debra Roberts, Co-Chair of IPCC Working Group II

Key-messages: from press release (cont.)

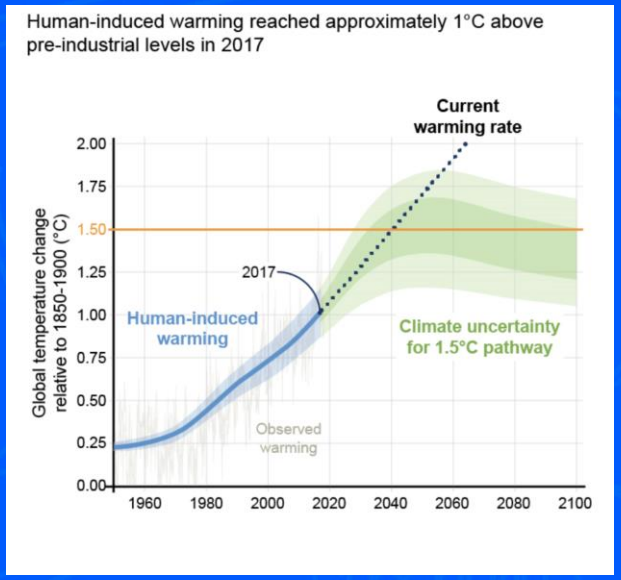
- "…***limiting warming to 1.5°C is possible within the laws of chemistry and physics but doing so would require unprecedented changes***…" Jim Skea, Co-Chair of IPCC Working Group III.
- "…***limiting global warming to 1.5° C*** compared with 2° C ***would reduce challenging impacts*** on ecosystems, human health, ***making it easier to achieve the UN-SDG*** …" Priyardarshi Shukla, Co-Chair of IPCC Working Group III.
- "…***some of the kinds of actions that would be needed to limit global warming to 1.5°C are already underway*** around the world, ***but they would need to accelerate***…" Valerie Masson-Delmotte, Co-Chair of Working Group I.
- "…***this report gives policymakers and practitioners the information they need to make decisions*** that tackle climate change while considering local context and people's needs…" Debra Roberts, Co-Chair of IPCC Working Group II.

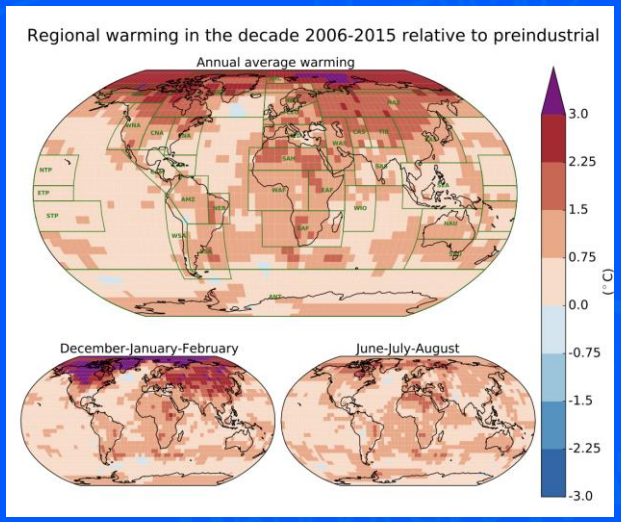
Main Chapter Key-questions ?

- ***Chapter 1:* Context**
  - How close are we to 1.5° C?
- ***Chapter 2:* Mitigation pathways**
  - What kind of pathways limit warming to 1.5° C and are we on track?
  - What do energy supply and demand have to do with limiting warming to 1.5° C?
- ***Chapter 3:* Impacts**
  - What are the impacts of 1.5° C and 2° C of warming?
- ***Chapter 4:* Global Responses**
  - What transitions could enable limiting global warming to 1.5° C?
  - Why is adaptation important in a 1.5° C warmer world?
- ***Chapter 5:* Sustainable development, poverty, inequities**
  - What are the connections between sustainable development and limiting global warming to 1.5° C?
  - What are the pathways to achieving poverty reduction and reducing inequalities while reaching the 1.5° C world?

Ch1 - How close are we to 1.5° C?

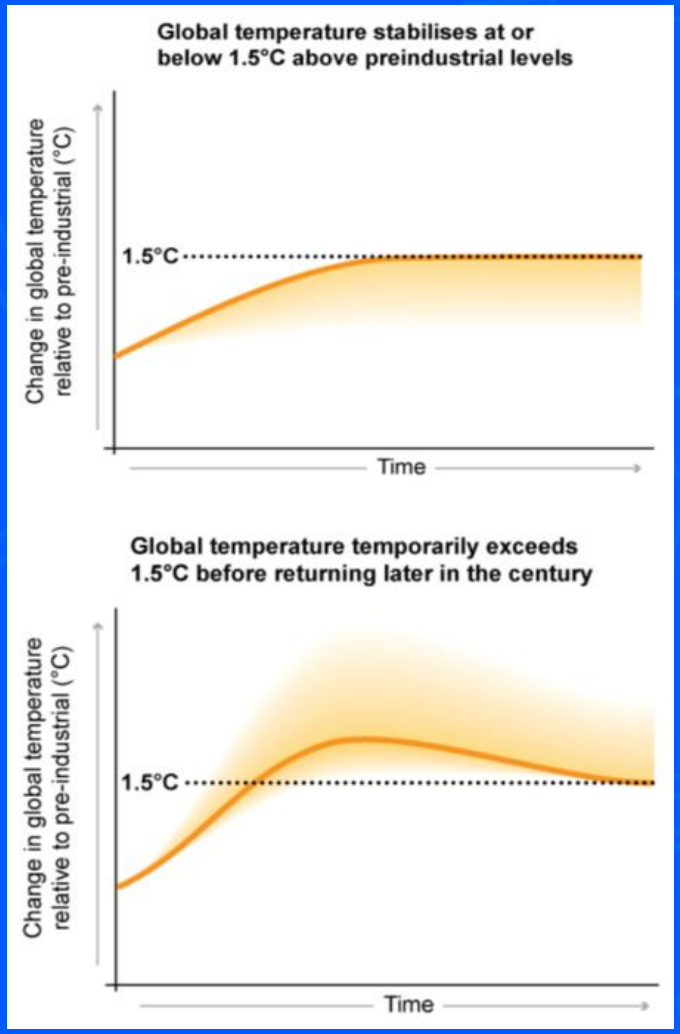
- Human–induced ***warming has already reached about 1° C above pre-industrial levels*** *(high confidence)*.
- ***If the current warming rate continues*** (+0.2°C per decade), the world would reach human–induced ***global warming of 1.5° C around 2040*** *(high confidence)*.
- Since the 1970s, most land regions have been warming faster than the global average, so ***warming in many regions has already exceeded 1.5° C above pre-industrial levels*** *(high confidence)*.
- ***Over a fifth of the global population live in regions that have already experienced warming in at least one season that is greater than 1.5° C*** above pre-industrial levels *(high confidence)*





Ch2 - What kind of pathways limit warming to 1.5° C and are we on track?

- ***There is no definitive way to limit global temperature rise to 1.5° C above pre-industrial levels***.
- This Special Report identifies ***two main conceptual pathways***:
  - *Without overshooting*: stabilises global temperature at, or just below, 1.5° C.
  - *With overshooting*: sees global temperature temporarily exceed 1.5° C before coming back down.
- ***Countries' pledges agreed in Paris*** to reduce their ***emissions are currently not in line with limiting global warming to 1.5° C*** (NDCs)



Ch2 - What do energy supply and demand have to do with limiting warming to 1.5° C?

Energy supply

- ***A major reduction in greenhouse gas emissions in all sectors*** (e.g. buildings, industry, transport, energy, and agriculture, forestry and other land use) ***would be required*** *(high confidence)*.
- ***Different sectors are not independent*** of each other and making changes in one can have implications for another.

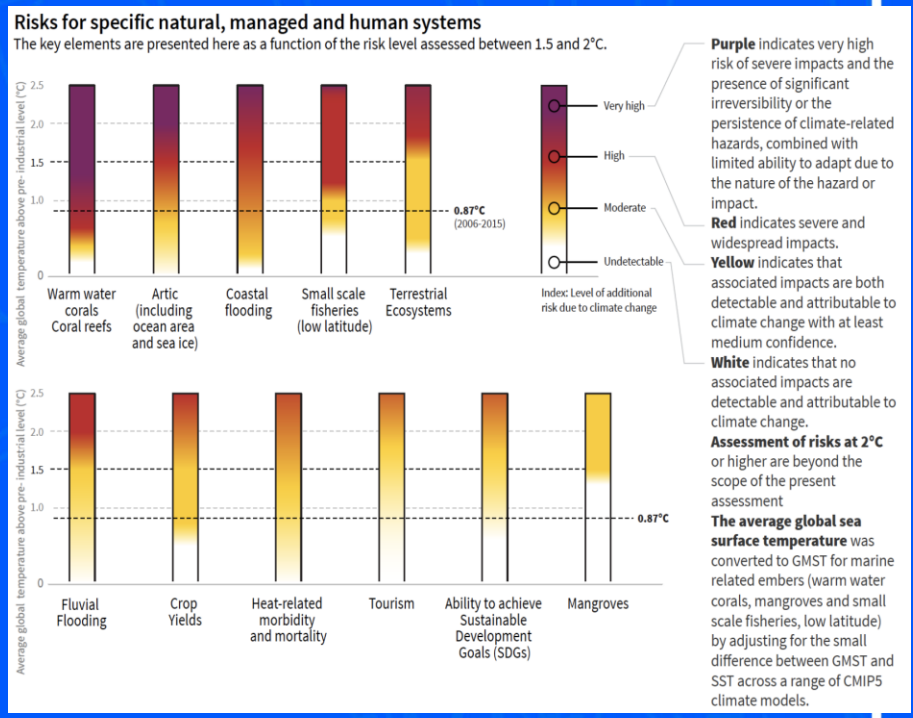
Energy demand

- This category includes ***improving energy efficiency*** in buildings and ***reducing consumption*** of energy and greenhouse-gas intensive products ***through behavioral and lifestyle changes.***

Demand and supply-side measures have to work in parallel with each other and will have strong effects on the options to reduce emissions (i.e. remove CO_2 from the atmosphere)

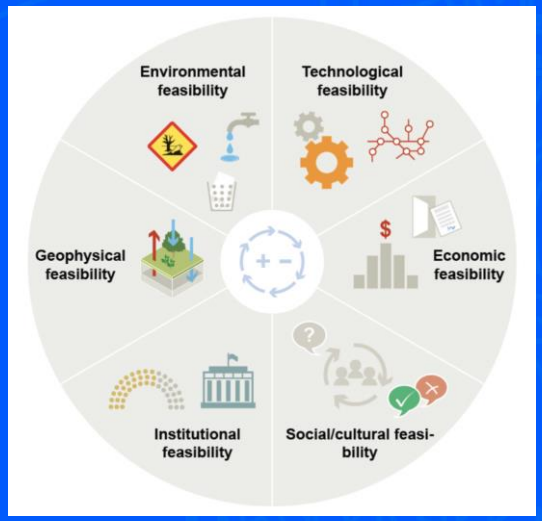
Ch3 - What are the impacts of 1.5° C and 2° C of warming?

- The ***impacts of climate change are not spread uniformly across the globe***, and different parts of the world experience impacts differently *(high confidence)*.
- An average ***warming of 1.5° C across the whole globe raises the risk of*** heatwaves and heavy rainfall events, amongst many other ***potential impacts*** *(high confidence)*.
- ***Limiting warming to 1.5° C rather than 2° C can help reduce these risks***, but ***the impacts will depend on the specific greenhouse gas emission 'pathway'*** taken:
  - ***The impacts of temporarily overshooting 1.5° C*** and returning later in the century ***could be larger*** than if temperature stabilizes below 1.5° C *(high confidence)*.
  - The ***size and duration of an overshoot will also affect future impacts*** *(high confidence)*.



Ch4 - What transitions could enable limiting global warming to 1.5°C?

- The ***world would need to transform in a number of complex and connected ways***.
- ***Transitions towards lower greenhouse gas emissions are already underway*** in some cities, regions, countries, businesses and communities, ***but there are few that are currently consistent with limiting warming to 1.5°C***.
- ***Meeting this challenge would require a rapid escalation in the current scale and pace of change***, particularly in the coming decades.
- ***The 'feasibility' of transitions*** (i.e. adaptation and mitigation options or actions) ***requires careful consideration of multiple different factors*** (e.g. environmental, technological, economic, social/cultural, institutional, geophysical feasibilities).

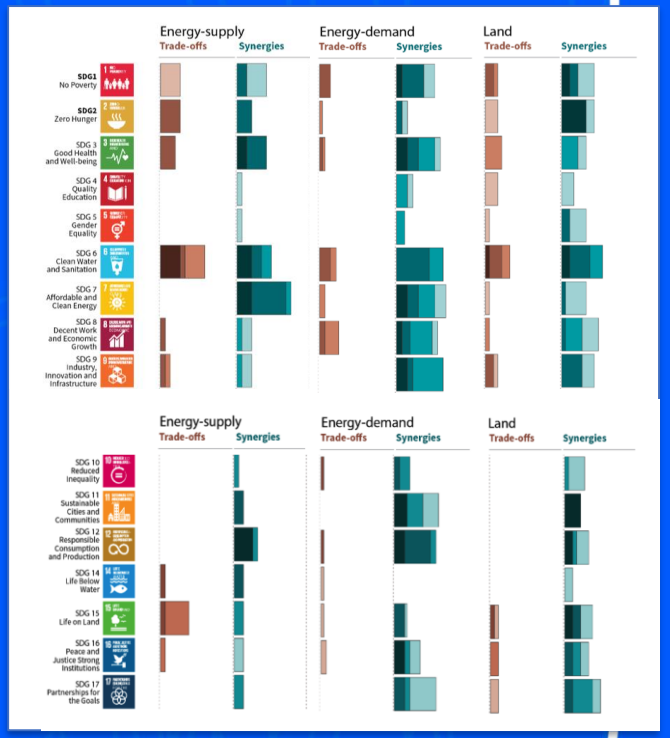


Ch4 - Why is adaptation important in a 1.5° C warmer world?

- Climate change impacts are different across the world, so ***people in different regions are adapting in different ways*** *(high confidence)*.
- ***A rise in global temperature from 1° C to 1.5° C, and beyond, increases the need for adaptation (both individual and transformational adaptations)***, but stabilising global temperatures at 1.5° C above pre-industrial levels would require a ***smaller adaptation effort than for 2° C*** *(high confidence)*.
- Despite many successful examples around the world, ***progress in adaptation is, in many regions, in its infancy and unevenly distributed globally***.
- Adaptation is important to reduce the negative impacts from climate change, but ***adaptation measures on their own are not enough to prevent climate change impacts entirely*** *(high confidence)*.

Ch5 - What are the connections between sustainable development and limiting global warming to 1.5˚ C?

- ***Climate change affects the ability to achieve sustainable development goals*** but ***limiting warming to 1.5˚ C will help to meet some sustainable development targets*** *(high confidence)*.
- ***Pursuing sustainable development will influence emissions, impacts and vulnerabilities*** *(high confidence)*.
- Responses to climate change in the form of ***adaptation and mitigation will also interact with sustainable development*** with positive effects, known as ***synergies***, or negative effects, known as ***trade-offs*** *(high confidence)*.
- ***Responses to climate change can be planned to maximize synergies and limit trade-offs with sustainable development***.



Ch5 - What are the pathways to achieving poverty reduction and reducing inequalities while reaching the 1.5° C world?

- Which ***pathways*** are possible and desirable ***will differ between and within regions and nations***.
- This is due to the fact that ***development progress to date has been uneven and climate-related risks are unevenly distributed***.
- ***Flexible governance would be needed*** to ensure that such pathways are inclusive, fair, and equitable to avoid poor and disadvantaged populations becoming worse off.
- ***'Climate-Resilient Development Pathways' (CRDPs) offer possibilities to achieve both equitable and low-carbon futures***.

Next steps

- **IPCC's Sixth Assessment Cycle**
  - ***Special Reports:***
    - Global Warming of 1.5ºC (2016-2018)
    - Ocean and Cryosphere in a Changing Climate (2017-2019),
    - Climate Change and Land (2017-2019)
  - ***Assessment Report***
    - AR6 (2018-2022)
- **SR1.5 and Conference of Party (COP)**

SR1.5 in COP24 Katowice 3-14 Dec.

Discussion within the

Subsidiary Body for Scientific and Technological Advice, Forty-ninth session, Katowice, 2–8 December 2018, Agenda item 6, Research and systematic observation

Proposed text *"…. The SBSTA noted the IPCC Special Report on Global Warming of 1.5° C.21 It welcomed the efforts of the IPCC experts on the report and the presentations given by IPCC experts and the rich dialogue that Parties and observers had with IPCC experts at the SBSTA– IPCC special event. It noted the importance of the underlying research and systematic observation enabling the production of the report. It took note of the knowledge gaps and information needs related to systematic observation in the report".*

Request of changes: *replace "noted" with "welcomed"*

Not approved after a long discussion

Thanks for your attention

SPM word analysis

Q&A session

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CMCC - SISC WEBINAR

21 Dicembre 2018 - h. 11.00 - 12.30

I negoziati sul clima a Katowice: esiti della COP24

Un'analisi degli esperti della Fondazione CMCC – Centro Euro-Mediterraneo sui Cambiamenti Climatici

Lucia Perugini *(Divisione IAFES)*
Eleonora Cogo *(Divisione CSP)*
Federico Brocchieri *(Divisione IAFES)*
Marinella Davide *(Divisione ECIP)*

Modera: ***Francesco Bosello,***
CMCC (Divisione ECIP) -
Italian Society for Climate Science ***(SISC)***

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If you have any further question about the webinar, please email: webinar@cmcc.it

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