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附件： 1（仅以英文提供）

主题： 谨请为 WWRP 人工影响天气专家组（WxMOD）的工作提供资助

尊敬的先生/女士，

谨此转达世界天气研究计划（WWRP）的谢意。感谢会员通过加入人工影响天气专家组，不断参与推进对人工影响天气的科学理解和负责作业。

鉴于水资源短缺加剧、气候相关极端事件频发、技术迅猛发展、从业务或研究活动的国家数量增加，人工影响天气极具全球意义。随着众多国家开展某种形式的人工影响天气（从增雨到消雹），我们不断需要合理的科学原则、透明度和负责任的治理。同时，AI 辅助的决策系统、先进的数值模式和新型机载观测平台等技术的快速演变正在重塑与大气干预相关的可能性和风险。

作为关于天气、气候和水的权威机构，WMO 肩负着引导国际社会在此敏感领域迈向科学坚实、道德健全、透明作业的独特责任。WMO 通过其 WWRP 和人工影响天气专家组（ET WxMOD），为全球协调、经同行评审的科学评估、指南编制提供了重要机制，从而保护公众信任、支持各国做出知情决策。

第十五次世界气象大会（Cg-15，2007）敦促秘书处建立一个信托基金，以支持每四年一次的“WMO 人工影响天气科学大会”，以及“WMO 人工影响天气专家组”，为人工影响天气和业务提供培训和良好科学做法指导意见。继成功召开第十一次“WMO 人工影响天气科学大会”（2025 年 11 月）后，业界重申需要加强协调、公正科学评估、提高当前研究和业务活动的全球知名度。专家们特别强调了不断开展消雹综合科学审查的重要性，这一领域在多个区域具有重大的社会和经济影响。这呼应了执行理事会第七十九次届会（EC-79,2025 年）关于专家组应定期提供人工影响天气相关主题最新信息的要求。

为满足这些需求，WWRP 专家组谨此邀请 WMO 会员向 WMO 人工影响天气信托基金供资。这将使专家组得以实施其 2026-2029 年工作计划，包括：

- (1) 编写一份经同行评议的消雹科学评审报告，涉及物理原则、方法、历史经验、评估方法、不确定性和全球惯例；
- (2) 协调国际专家组会议，以不断开展科学监督、制定指导意见、支持社群建设；
- (3) 编制一个全球人工影响天气计划目录，支持透明化和信息共享；
- (4) 在主要国际大会上，加强人工影响天气相关科学会议，确保知名度、与更广泛的大气科学保持一致；
- (5) 扩展并翻译支持能力发展与良好科学做法的教育宣传材料。

致： WMO 澳大利亚、巴西、中国、印度尼西亚、日本、俄罗斯、沙特阿拉伯、南非、瑞士、阿拉伯联合酋长国和美国常任代表（有限分发）

全部捐款将直接用于支持全球知识库、协助会员在考虑或实施人工影响天气做法的领域做出知情、循证决定。根据联合国财务条例，基金将通过现有的 WMO 信托基金进行透明化管理。

出资会员将定期收到最新进展信息，其国内专家将有机会参与磋商、研习会和审查过程。工作计划和预算详见[附件](#)。

提供 WWRP 支持的秘书处成员和专家组将随时为您服务、提供进一步的信息，包括信托基金捐款的行政程序。如有疑问，请联系 WMO 为 WWRP 提供支持的工作人员、天气与社会影响研究处处长 Estelle de Coning 博士（[edeconing@wmo.int](mailto:edeconing@wmo.int)）。

我谨借此机会衷心感谢您对 WMO 活动的一贯支持。

谨上

A handwritten signature in black ink, appearing to read 'K. Barrett', with a long horizontal flourish extending to the right.

寇·巴雷特女士  
代秘书长

## BACKGROUND, ACTIVITIES, AND BUDGET OVERVIEW

### (1) Background and mandate

- **Cg-15 (2007)** urged the establishment of a Trust Fund to support the quadrennial WMO Scientific Conference on Weather Modification and the Expert Team.
- **EC-60 (2008)** requested regular updates from the Expert Team on Weather Modification.
- **Cg-18 (2019)** instructed the Research Board to ensure coherent planning and implementation of WMO research activities within the WWRP.
- **EC-79 (2025)** adopted an updated WMO Statement on Weather Modification, with cognizance that WMO maintains a neutral position on weather modification, emphasizing scientific expertise, good practice, and transparency. It also requested the Expert Team to provide regular updates on weather modification-related topics.

### (2) Need for a Scientific Review of Hail Suppression

- Hailstorms cause severe damage to agriculture, infrastructure, aviation, and public safety.
- The 2018 WMO review on precipitation enhancement specifically excluded hail suppression, thus there is no WMO endorsed global scientific assessment.
- The proposed review will:
  - Summarize physical understanding of hail processes
  - Evaluate scientific methods and operational practices
  - Review global experience and uncertainties
  - Provide neutral, peer-reviewed guidance for Members.

### (3) Planned activities of the Expert Team (2026–2029)

- A peer-reviewed scientific review on Hail Suppression
- Update a directory of global weather modification activities
- Promotion of WM sessions at major conferences (for example ICCP, AGU, EGU, IAMAS, AMS and so forth)
- Planning for the twelfth WMO Scientific Conference on Weather Modification (2029)
- Educational and outreach materials.

### (4) Scope of the Review on Hail Suppression

The review will focus on five major themes:

- Physical understanding of hail

- Microphysical processes leading to hail initiation, growth, and fallout within convective systems
- Role of aerosols, updraft dynamics, storm evolution, and atmospheric thermodynamics.
- Scientific theories and methods of hail suppression
  - Glaciogenic and hygroscopic methods, selective triggering and storm modification strategies
  - Physical pathways through which seeding might influence hailstone formation.
- Evaluation methods
  - Observational requirements (in situ, radar, satellite), statistical and randomized trial design, and model integration
  - Metrics to quantify hail modification versus natural variability.
- Historic hail suppression research and trial experience
  - Lessons learned from major trials worldwide, including both successes and inconclusive outcomes
  - Environmental and societal considerations.
- Current global activities and future research priorities
  - Summary of active national programmes and emerging technologies
  - Recommendations for improving scientific rigor, transparency, and international collaboration.

### **Expected outcomes**

The review will:

- Provide an authoritative scientific resource for WMO Members and the broader research community
- Clarify the conditions under which hail suppression may or may not be scientifically feasible
- Support evidence-based policies, capacity development, and responsible implementation
- Identify high-priority research needs to accelerate progress in the field.

### **Project leadership and peer review**

The review will be led by the Expert Team on Weather Modification (WxMOD) of the World Weather Research Programme, drawing on international peer reviewers to ensure scientific neutrality and global representation.

(5) Budget requirements (2026–2029)

Expert Team meetings

<b>Function</b>	<b>Estimated Cost (USD)</b>
3-day ET meeting (11 members), aligned with WWRP 2027 conference	35 000
5-day ET meeting, aligned with twelfth Conference (2029)	60 000
Translation of existing COMET modules into more languages (Arabic, Russian and Chinese) (2026–2027)	45 000

Scientific Review on Hail Suppression

<b>Function</b>	<b>Estimated Cost (USD)</b>
Preparation, coordination, peer review, editing, publication (2026–2028)	60 000 (over three years)
<b>TOTAL</b>	<b>200 000 (over 4 years)</b>

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