

2 February 2017

English only

---

**Committee on the Peaceful  
Uses of Outer Space**  
**Scientific and Technical Subcommittee**  
**Fifty-fourth session**  
Vienna, 30 January-10 February 2017  
Item 10 of the provisional agenda\*  
**Space weather**

### **Space weather: views of France**

1. The delegation of France is pleased to submit the following conference room paper in connection with agenda item 10 of the 54th session of the Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space.

2. A national group of experts on space weather has been set up in France under coordination by CNES,<sup>1</sup> the French space agency, with participation of more than 30 experts from various institutes and governmental agencies such as CEA,<sup>2</sup> CNES, CNRS,<sup>3</sup> CLS,<sup>4</sup> DGAC,<sup>5</sup> DSNA,<sup>6</sup> Météo France, Ministry of Defence (CIE,<sup>7</sup> DGA,<sup>8</sup> CDAOA),<sup>9</sup> Ministry of Environment, Energy and Sea, Ministry of Higher Education and Research, Observatory of Paris (LESIA),<sup>10</sup> ONERA,<sup>11</sup> University of Strasbourg and the Air and Space Academy. The purpose of this group is to provide an assessment of impacts on 4 domains: defence, space, civil aviation, terrestrial technological infrastructure, and promote the sharing of information on space weather events (post-event analysis).

3. At national level, the French Air Force (CDAOA/COSMOS)<sup>12</sup> has developed a space weather system for the armed forces. ONERA, with the support of CNES, has developed an important expertise over the last 20 years, in the space radiation domain with advanced space weather applications, such as real-time nowcasting of the Earth's trapped particle environment, based on data assimilation techniques allowing

---

\* [A/AC.105/C.1/L.355](#).

<sup>1</sup> Centre National d'Etudes Spatiales.

<sup>2</sup> Commissariat à l'Energie Atomique et aux énergies alternatives.

<sup>3</sup> Centre National de la Recherche Scientifique.

<sup>4</sup> Collecte Localisation Satellites.

<sup>5</sup> Direction Générale de l'Aviation Civile.

<sup>6</sup> Direction des Services de la Navigation Aérienne.

<sup>7</sup> Commandement Interarmées de l'Espace.

<sup>8</sup> Direction Générale de l'Armement.

<sup>9</sup> Commandement de la Défense Aérienne et des Opérations Aériennes.

<sup>10</sup> Laboratoire d'Etudes Spatiales et d'Instrumentation en Astrophysique.

<sup>11</sup> Office National d'Etudes et de Recherches Aérospatiales.

<sup>12</sup> Centre Opérationnel de Surveillance Militaire des Objets Spatiaux.



combination of *in-situ* measurements and physics based models in an optimal way. These products are provided to the space industry in charge of the satellite design and to spacecraft operators. Involvement of the French Sun-Earth scientific community is an important asset for developing models and tools to better understand underlying physical processes and forecast space weather events.

4. At European level, France (as a participating Member State since 2008) supports the development of a European space weather system and associated pre-operational services within the space weather segment of the ESA space situational awareness programme. France also endorses a future evolution towards an operational system delivering space weather services, as indicated in the recent European Union space strategy for Europe.

5. At international level, France recommends to better define and characterize extreme space weather events and their probability of occurrence and assess their impacts on technological systems, with a focus on spacecraft and aircraft. This work should be done at international level, including through UNISPACE+50 Thematic Priority IV (International framework for space weather services). For instance, during the 39th session of the Assembly of the International Civil Aviation Organization (ICAO) in Montreal, September 27th-October 6th, 2016, France, on behalf of the 44 Member States of the European Civil Aviation Conference (ECAC), drew the attention of ICAO to the importance of investigating the resilience of modern civil aviation to exceptionally strong space weather events. France offered to provide ICAO with an initial contribution on this topic. This contribution aims at assessing whether or not exceptionally strong solar events, which are known to occur, could be hazardous/seriously disruptive to highly sophisticated modern aviation, and whether mitigation strategies should be developed.

---