

**International Forest of Friendship Newsletter #5
Preparations for 2016 (Our 40th Year)—World Friendship through Flight**

This fifth edition of the International Forest of Friendship (www.ifof.org) newsletter reports on continued preparations for the Forest's 40th (!) anniversary ceremonies, which will be in Atchison on **June 17-18, 2016 (Fri-Sat)**. This year's focus on "World Friendship through Flight," expands on the Forest's core theme of "World Friendship through Flying" to include spaceflight and the increasing use of unmanned vehicles and remote sensing to address problems across borders. We want to use this year to celebrate our international friends and expand our partnerships.

To build on the "World Friendship Through Flight" theme this newsletter has added more of NASA's international activities, a variety of multinational initiatives related to NOAA, and the growing contributions of unmanned aerial vehicles (UAVs) and related systems to peacekeeping, stability and rapid response situations. I've particularly appreciated the support from NASA Administrator [Charles Bolden](#) (IFOF honoree 1994) and Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator [Kathryn Sullivan](#) (IFOF honoree 2012), whose staffs have provided much valuable information. We welcome your suggestions at forestoffriendship@gmail.com, both for new initiatives and to follow up on previous windows of opportunity to sustain or reinvigorate peace or friendship.

We hope to see you in Atchison on June 17-18 for the ceremonies when [CAPT Barry Schiff](#) will be our keynote speaker. A special treat this year will be the lunch that Cindy Apple has arranged on the 18th in the new, spectacular Ferrell Academic Center at Benedictine College, North Campus with its views overlooking the bluffs and the Missouri River. Sponsorship and registration info is on the Forest website.

On a sad note, but in loving memory, we honor a beloved inductee of the Minnesota 99s (in 1994): Elizabeth "Betty" (Liz) Wall Strohfus. She passed peacefully on the night of March 5, with her children and family with her at the end. An aviation pioneer who paved the way for future generations of women aviators, Betty was a patriot, a veteran and a national treasure whose unbridled passion for aviation and joyful enthusiasm for flight inspired countless others to explore aviation in various forms over the course of her lifetime. This tiny lady with the great big heart has left a huge void that no one can fill. It is an understatement to say that her presence will be missed, but we can find some small comfort as her spirit continues on in the hearts and memory of those who had the privilege of knowing her. A 43-min video about her life is at <https://www.youtube.com/watch?v=K7KDubhzmYo>

Leonard Buddenbohm and Lin Wells
Co-Chairmen

- NASA-related International Activities:
 - International Space Station (ISS)
 - International Forum on Aviation Research (IFAR)
- NOAA-related Multinational Activities
 - Cospas-Sarsat International Satellite-Aided Search and Rescue System
 - Imagery to support responders in natural and (some) man-made disasters: the International Charter "Space and Major Disasters"
 - Argos: Worldwide monitoring of species and systems that have tracking devices
- Contributions of UAVs and related systems to peacekeeping, stability and rapid response situations

NASA-related International Activities

International Space Station (ISS)

The ISS https://www.nasa.gov/mission_pages/station/main/index.html is an excellent example of how many nations can work together for the peaceful exploration of space. As a truly global endeavor, more than 200 people from 18 countries have visited this unique microgravity laboratory that has hosted more than 1,900 research investigations and more than 90 nations' contributions to research and education aboard the orbiting facility.

The station is NASA's springboard to the rest of the solar system. On orbit, it's helping to test critical human health issues associated with long-duration spaceflight. Astronauts aboard the ISS are helping us learn more about the effects of long term space travel.



Among many advances from the station that we now apply to Earth are new ultrasound and telemedicine techniques, robotic arms to assist in surgery and new protocols to help prevent bone density loss. NASA also is learning new things about our home planet with the growth of the station as a platform for Earth observation, and the ISS is facilitating the growth of a robust commercial market.

The station also has built an exceptional model for global cooperation. The commercial cargo program is an important, successful investment that has helped industry to innovate and demonstrate the capabilities for operating in low Earth orbit as NASA moves towards commercial crew launches in the near future. The ISS is a catalyst for the future, and also is leveraging today's innovation for NASA's Journey to Mars.

International Forum on Aviation Research (IFAR)

IFAR is the only government-sponsored aviation research network in the world. It consists of 26 member states and was established in 2008. IFAR's goal is to enable information exchange among members to identify areas for potential mutually beneficial aeronautics collaboration. It also focuses on educating the next generation of leaders in the field of aviation.

IFAR's annual summit allows members to discuss goals and activities for the next year and to receive updates on its technical working groups. This year's summit will be held in Daejeon, South Korea

from September 26 to 29, 2016. Recent summits have been held in Berlin, Germany; Paris, France; Nagoya, Japan; Moscow, Russia; Zhuhai, China; and California, USA.

IFAR research has five focus areas: emissions, noise, aviation security, aviation safety, and efficient airspace operations. Specific working groups have been constructed to address topics such as: alternative fuels, air traffic management (ATM), supersonic aircraft, and the impacts of aviation on climate change. The alternative fuels working group has been the most successful. Its objective is to provide data analysis of alternative aviation fuel experiments, and create a window through which the technical community can identify new opportunities for collaboration in this field. In May 2014, the National Research Council of Canada and the German Aerospace Center joined NASA's "alternative fuel effects on contrails and cruise emissions II" (ACCESS-II) flight experiments that conducted a series of flight tests designed to study the effects on emissions and contrail formation of burning alternative fuel in jet engines. The experiments took place at the Armstrong Flight Research Center and the lead center is NASA's Langley Research Center.



Photo taken during International flight tests under IFAR to study the effects on emissions and contrail formation of burning alternative fuel in jet engines

The working group on ATM will hold a workshop from March 21 to 23, 2016, to discuss innovative methods to leverage existing expertise and resources. NASA currently has five active ATM agreements with IFAR members (France, Netherlands, Germany, Korea, and Japan).

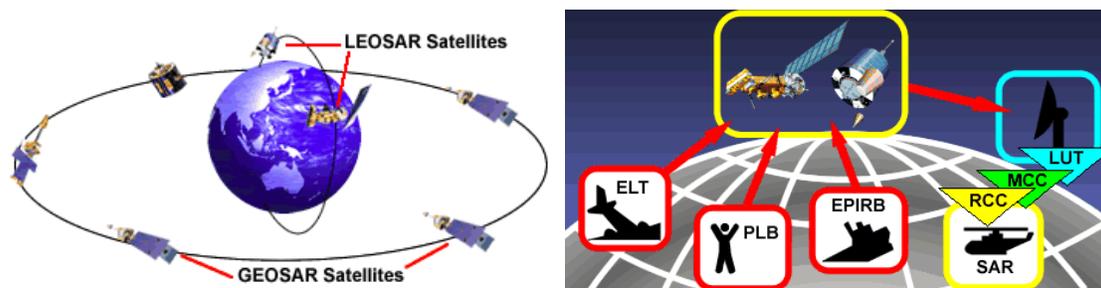
IFAR consists of one representative from each country. Of the 26 members, three are universities designated by their governments to represent their country. Industry participation is not permitted. IFAR cooperation is pre-competitive in nature, which allows for members to work together to solve global aviation challenges. The leadership of IFAR consists of a Chair, Past Chair, Vice-Chair, and the Founder. The Japanese Aerospace Exploration Agency is currently the Chair, the Netherlands Aerospace Center is the Vice-Chair, and NASA is the Past-Chair. During the 2015 Summit at NASA Ames Research Center IFAR recognized Joachim Szodrich, formerly of the German Aerospace Center, as the "Founder" of IFAR and also made him a permanent representative on the Leadership Team.

NOAA-related International Activities

Cospas-Sarsat International Satellite System for Search and Rescue (SAR)

The international Cospas-Sarsat Programme <https://www.cospas-sarsat.int/en/> provides accurate, timely, and reliable distress alert and location data to help search and rescue authorities assist persons in distress. To achieve this, Cospas-Sarsat participants implement, maintain, co-ordinate and operate a mix of Low Earth Orbit (LEO) and Geosynchronous Orbit (GEO) satellite systems capable of detecting distress alert transmissions from radiobeacons that comply with Cospas-Sarsat specifications and performance standards (typically on 406 MHz), and determining their position anywhere on the globe. The distress alert and location data is provided by Cospas-Sarsat participants to the responsible SAR services. A Medium Earth Orbit (MEO) constellation is planned for the future.

Cospas-Sarsat Architecture



ELT: Beacon for Aircraft Use; PLB: Beacon for Personal Use; EPIRB: Beacon for Maritime Use; LUT/MCC/RCC: various receiving terminals and coordination centers

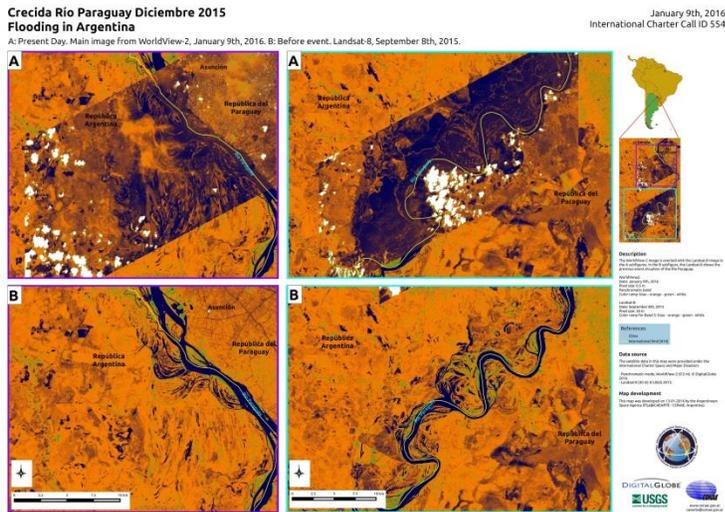
Cospas-Sarsat co-operates with the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the International Telecommunication Union (ITU) and other international organizations to ensure the compatibility of the Cospas-Sarsat distress alerting services with the needs, standards and applicable recommendations of the international community.

The program started back in the 1970s between USA, USSR, France and Canada who agreed to use their earth observing satellites to locate individuals, airplanes and sea vessels in distress. The impetus was actually a plane crash in which a U.S. senator perished. The program has continued well despite political roller coasters over the decades and represents an excellent example of "friendship"/partnership for the benefit of humankind. On the U.S. side NOAA, DOD, NASA and U.S. Coast Guard participate.

International Charter Space and Major Disasters

The International Charter <https://www.disasterscharter.org/web/guest/home> is another exceptional partnership – it was started by CNES (the French Space Agency), ESA, CSA (Canada) and later was joined by many other space agencies including NOAA and USGS. It aims to provide “a unified system of space data acquisition and delivery to those affected by natural or man-made disasters through Authorized

Users.” Each agency member has committed resources to support the provisions of the Charter and thus is helping to mitigate the effects of disasters on human life and property. This partnership is about collecting and providing, for free, satellite imagery from the satellites of the participating agencies and developing them into value-added products to be used by emergency responders. The charter most recently was activated for Cyclone Winston in Fiji in February 2016. It was activated 42 times in 2015, and 46 times in 2014.



Recent disaster relief products which have benefitted from the activation of the International Charter

Argos

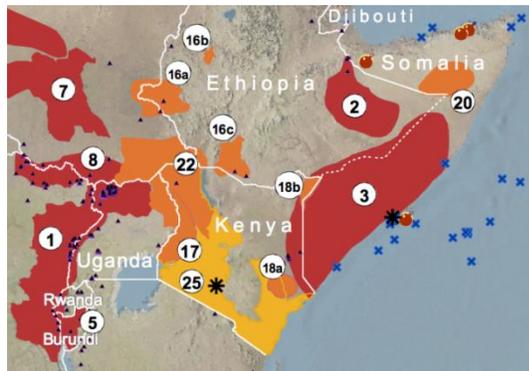
Argos <http://www.argos-system.org/> is a unique worldwide location and data collection system dedicated to studying and protecting the environment. Operating since 1978 the Argos system flies on polar orbiting satellites, collects data from Platform Terminal Transmitters, PTTs, and distributes sensor and location data to the final users. Argos helps the scientific community monitor and understand our environment better, but it also helps industry comply with environmental protection regulations implemented by various governments. It has been a great multilateral success that helps to monitor the environment via monitoring of species and systems that have tracking devices on them. Some 22,000 transmitters a day are involved, including 8,000 animals tagged and tracked, with over 100 user countries. All programs using Argos have to be related in some way or other to environmental protection, awareness or study, or to protecting human life. Applications for which there is a clear governmental interest are also approved.

Contributions of UAVs and related systems to peacekeeping, stability and rapid response situations

Patrick Meier's iRevolutions blog

UAVs are making exceptional contributions to areas such as peacekeeping, stability operations, and other situations requiring rapid response, local control and tailorable products. Patrick Meier has been one of the leaders in the use of unmanned vehicles, and his *iRevolutions* blog <http://irevolutions.org/> has a great deal of fascinating information. In this context, see his Aug 2015 post, "Using UAVs to Map

Diamond Mines and Reduce Conflict in Africa” <http://irevolutions.org/2015/08/11/uavs-map-diamond-mines/> and an older, but still valid report: Crisis Mapping Africa’s Crossborder Conflicts <http://irevolutions.org/2008/11/24/crisis-mapping-africas-crossborder-conflicts/>



Other UAV-related Transnational Organizations

Two other excellent sources of information about UAVs in these areas are [WeRobotics](http://werobotics.org/) <http://werobotics.org/> and [UAViators](http://uaviators.org/) <http://uaviators.org/>. The former looks at ways for local communities to use robots for social good, as does “Indigenous Community in Guyana Builds Drones for Good” <http://irevolutions.org/2015/02/05/indigenous-community-drones-for-good/>. UAViators includes an example of UN Security Council approval of the use of unmanned drones by the UN Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO) in January 2013. The drones were officially launched in December 2013. MONUSCO is using the drones to promote peace and security. Proposed uses of the drones include assessing population movements, environmental challenges, and needs evaluations. The drones, which contain a camera with infrared and SAR capabilities, are based in Goma and will be deployed across North Kivu. Sources/ Links: <http://www.bbc.com/news/world-africa-25197754>. The ShadowView Foundation provides UAVs for environmental, conservation and humanitarian relief operations <http://www.shadowview.org/>.



Exceptional real-time work by UAVs also is being done in disaster response, at home and abroad. The two-minute YouTube video link below shows the very rapid response by Jarlath O’Neill-Dunne’s Spatial Analysis laboratory at the University of Vermont in mapping floods in Vermont in February 2016. Imagery products were in the hands of transportation planners within an hour of the completion of flight ops. <https://m.youtube.com/watch?feature=youtu.be&v=8pI6QtS8Lro>