

30th IAA SYMPOSIUM ON SPACE AND SOCIETY (E5)  
Interactive Presentations - 30th IAA SYMPOSIUM ON SPACE AND SOCIETY (IP)

Author: Mr. Bal Dhital  
Newcastle University, Australia, baldhital@me.com

Ms. Lolowa Alkindi  
Taiwan Space Agency (TASA), United Arab Emirates, lolowa.alkindi@gmail.com

Mr. David Girou  
Cosine Research BV, The Netherlands, d.girou@cosine.nl

Mr. William Grand-Maison  
Université de Sherbrooke, Canada, William.Grand-Maison@USherbooke.ca

Mr. Simon Jenner  
Australia, simon.jenner@community.isunet.edu

Ms. Evon Koprowski  
International Space University, Australia, evon.koprowski@community.isunet.edu

Ms. Juan Li  
Private individual www.oleg.space, China, juan.li@community.isunet.edu

Ms. Erin Madden  
Nova Systems, Australia, erin.madden@community.isunet.edu

Mr. Sonny Massahi  
Technical University of Denmark (DTU), Denmark, sonmas@space.dtu.dk

Mr. Michael Siddall  
International Space University (ISU)/University of South Australia, Australia,  
michael.siddall@internode.on.net

## WITHOUT SPACE

### Abstract

[11pt,a4paper,twoside]memoir  
[UKenglish]babel [utf8x]inputenc [T1]fontenc lmodern [margin=2.5cm]geometry  
2019 IAC Abstract

### Without Space

In a world without access to any of the assets humans have placed into space, what would be the effect? Participants of the 2019 Southern Hemisphere Space Studies Program, run by the International Space University (ISU) in Adelaide, Australia, set out to answer this question.

Framed as a conversational piece, the participants investigate non-military causes and responses to this potential situation. The paper raises awareness of the terrestrial reliance on space systems in everyday lives and explores the likely aftermath of a systemic outage.

Possible scenarios leading to a world without access to space are plentiful, ranging from fanciful to the tangible. For example, the shifting of Earth's magnetic fields and any subsequent change to its magnetosphere would have a negative impact on satellite access. Presented are the two most likely threats:

outages due to space debris and space weather events.

*Without Space* looks specifically at the following types of space assets as they relate to activities that impact daily life: space exploration capabilities; position, navigation, and timing; remote sensing; and telecommunication systems. Losses from commercial, economic, ethical, legal, political, societal, and technological perspectives are examined over time periods of one day, one week, one month, and one year.

In addition, The People's Republic of China and the United States of America are used as case studies to explore possible reactions to such a space outage. These provide not only a relatable and intimate picture, but also crucially encourage and inspire an understanding of the importance of space to our increasingly interconnected society.

The ability to recover services from both terrestrial systems and through the repopulation of orbits are briefly considered, though their complexity warrants a separate and more extensive exploration.

Interestingly, the creation of this paper has identified an absence of available research into the sudden disappearance of space assets, besides studies regarding national security. This has encouraged speculation of long term impacts, and inspires the opportunity for further discussion, investigation and research.