



Joint ISPRS/KCL/GMOSS Workshop – 26-27 October 2006: “Treaty Monitoring & Data Dissemination Policies”

WORKSHOP OVERVIEW - On the 26th and 27th October 2006, the Department of War Studies, King's College London, in conjunction with ISPRS (International Society for Photogrammetry and Remote Sensing) and GMOSS (Global Monitoring for Security & Stability), hosted a workshop on Treaty Monitoring and Data Dissemination Policies. The Department of War Studies has long been a leader in research devoted to the multi-disciplinary study of war and conflict. Dr. Bhupendra Jasani of the Department, who has an excellent reputation in nuclear weapons proliferation areas in general and outer space affairs in particular, was a major driving force in persuading the IAEA (International Atomic Energy Agency) to use commercially available space-based remote sensing data to monitor the nuclear activities of the signatories to the IAEA safeguards agreement. As early as 1984, the European Union Satellite Centre (EUSC) was conceptualised and since 1990 has been actively involved in monitoring arms control treaties, crisis and environment monitoring using information available from commercial remote sensing satellites.

The Department is currently involved in the European Commission's project GMOSS, coordinating some of the most important elements of European security-related research dealing with the use of space-based remote sensing information. For example, conflict resources, the environment (i.e. verification for the ENMOD convention), counter-terrorism, border monitoring and refugee movement are all areas and/or threats that could be affected by the use of remote sensing data. In addition to this, the Department is also involved as 'Chair' of working group VIII/5 of ISPRS, which is the world-renowned NGO 'devoted to the development of international cooperation for the advancement of knowledge, research, development and education in the photogrammetry, remote sensing and spatial information science, their integration and applications to contribute to the well-being of humanity and the sustainability of the environment'.

Advancements in the technical capabilities of remote sensing satellites, which belong to the civilian sector, mean that these satellites could now be used for security applications by all. European space and defence policy currently does not sufficiently accommodate for issues relating to security, i.e. relevant treaties and data access and policies. For example, what is exactly meant by the term 'security' within the context of remote sensing satellite policy? If the international community is to subscribe to arms control or environmental treaties, it is important that they have the capability to verify that parties to the agreements are also complying with their commitments to the treaties. Therefore, should data from satellites be available at all? It is clear that remote sensing from outer space could considerably enhance global security. However, as there are few member states that actually construct, launch and operate such satellites, should cooperation be confined to a specific region or should we expand beyond its borders?

Software packages such as Google Earth have proved to be hugely successful; however, they also present problems to organisations within the security sector. If such data were to continue to be widely disseminated, certain organisations would then have to face the subsequent threats associated with such levels of transparency. It is evident that a decision needs to be made pertaining to the control of the dissemination of commercial satellite imagery before the situation spirals out of control. Should commercial satellite imagery be freely available? If so, there is no doubt that countries would request for particular sensitive areas to be obscured on the satellite image. Therefore, what decision process should be utilised in order to block a particular area?

Although Google Earth does offer high resolution imagery, it does not specialise in mapping or satellite imagery analysis, images are not updated on a regular basis, the technical information lacks data on the origin and quality of the image, countries such as Africa are covered only at fairly weak resolutions, and the European user lacks control, as it is an American product and therefore, there is no guarantee of independent use. While it maybe too soon to decide the full impact of Google Earth, organisations such as GMES should learn from such lessons and start working on improved models for use by the European community. It was observed and generally agreed upon that European security and defence cannot currently be seen as a valid application by many nations within Europe. This could partially be due to the lack of activity within the European defence setting. Further questions were then raised regarding the right to the dissemination of data; is there a need for regulations? Should data dissemination policies be put in place in order to assist imagery providers when disseminating data to companies such as Google Earth?

The availability of satellite images is rapidly increasing. As a result of the unique advantages (i.e. non-intrusive, in-orbit readiness, wide area coverage) that remote sensing satellites for civil/public security offer, demand will only increase. During the workshop, an interesting proposal was made suggesting that, 'governments buy satellite data for a multi-user license fee so that data can be contributed to international efforts for common security concerns'. By making use of an improved re-numeration of commercial satellites, the operators would be assisted in sustaining the supply of data. Thus, governments would be paying the operator for their contribution to international cooperation.

Another region that could potentially benefit from the use of a regional satellite monitoring agency is the Middle East. The peace process within this area is indicative of the growing feeling towards cooperation rather than confrontation. Similar tendencies have also been observed within the Gulf region where there has been a gradual improvement towards cooperation within the Gulf Cooperation Council (GCC). With these improvements in mind, it was proposed that the development of a regional satellite monitoring agency could be made possible via the promotion of confidence building measures (CBMs). It is already known that a lack of CBMs, usually resulting in deep-rooted suspicions, is one of the key causes of conflicts. Subsequently, if suitable CBMs could be applied to the region, this would result in the building of trust and therefore, the consequent realisation of the concept and advantages of collective security.

Japan is also advancing rapidly within the commercial imaging sector. Even though the commercial remote sensing sector in Japan is still premature when compared to Europe and the US, the area has slowly developed and now has a substantial number

of private entities involved. It is important to note here that as yet, no private entity based in Japan has launched a remote sensing satellite. Furthermore, no legal regulations pertaining to commercial remote sensing activities currently exist. The governmental data policy is of course, treated as a separate issue and is based on JAXA law, UN principles and SAC plans and strategy. However, Japanese space is currently at a cross-roads, where the new 'basic law of space activities', which is pending to be submitted to the Diet, could potentially trigger fundamental changes. The new basic law aims to change Japan's research and development oriented policy, into a more user-driven policy. In addition to this, the law challenges the 'exclusively peaceful purposes' clause of the Diet resolution of 1969, where the new security objective states that Japan will, 'promote the security of our homeland and people by contributing Japanese space capability to the international security arrangement'.

The workshop also consisted of a number of technical presentations in recognition of the fact that in today's world it is imperative that one has both a technical and political understanding of relevant situations in order to appreciate fully and to realise the most effective and efficient means by which threats and/or problems can be solved. Relating to this, another important point was raised during the workshop regarding the information gap currently existing between the technical experts, who utilise, process and disseminate the remote sensing data, and the decision-makers, who are involved in the decision-making process but are unable to efficiently exploit the data that they receive from the technical experts. It is clear that the solution to this problem is to provide decision-makers with the necessary technical background information so that they understand the benefits that can be obtained via the use of space-based remote sensing satellites. The information gap between technical experts and decision-makers is something that the European Commission have started to work on.

As was mentioned earlier, satellite imagery is an indispensable information source. By combining the data acquired from a satellite image with socio-economic models, field measurements, and then integrating these with GIS and GPS software, it is clear that an extremely valuable means of obtaining information and intelligence is available. Although a software system would not be able to fully replace an image analyst, it would certainly assist and reduce the amount of time that is used during the processing steps of a digital image in order to detect and analyse significant features of interest.

There is also much information to be achieved via the use of radar and interferometry techniques for the purposes of treaty monitoring. Using polarimetric methods, a number of advantages become available including: rapid mapping, the detection of vehicles that are hidden under vegetation, and the possibility of detecting underground explosions. Furthermore, with the advent of image data containing higher spectral, temporal, radiometric and spatial resolution, the development and application of advanced methods is a challenging and important task for the future in the remote sensing, geographical information science and computer vision communities. In order to achieve the aforementioned results, it is imperative that the dialogue between subject matter applications experts and data analysis experts is greatly improved.

The results of this workshop clearly demonstrate the advantages and benefits that are to be gained from the use of commercial remote sensing satellites. Not only do such capabilities offer a means towards arms control treaty verification; they also

have the potential to contribute to other areas of security, for example: peace-keeping operations and humanitarian assistance (i.e. monitoring of refugee movement). It is important now that the issues of data dissemination policy, as well as the existing information gap between technical experts and decision-makers, are discussed in order to fully appreciate the inherent advantages and efficiency offered by such technologies.