

# Satellite imagery in use

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## Satellite imagery is becoming an increasingly important tool for the humanitarian community.

In recent years the international humanitarian community's response to complex humanitarian emergencies has shown an increasing need for accurate and timely analyses of the location and state of displaced people. Satellite images allow the pinpointing of populations concerned and the geographical context of their surroundings.

For protection purposes it is important to be able to access data on, for example, a refugee camp location

and its distance from and access to international borders, potential risks from natural hazards as well as access to water and firewood. Up-to-date satellite images also provide detailed information on current road networks and affected areas in case of seasonal flooding – crucial for effective logistical support.

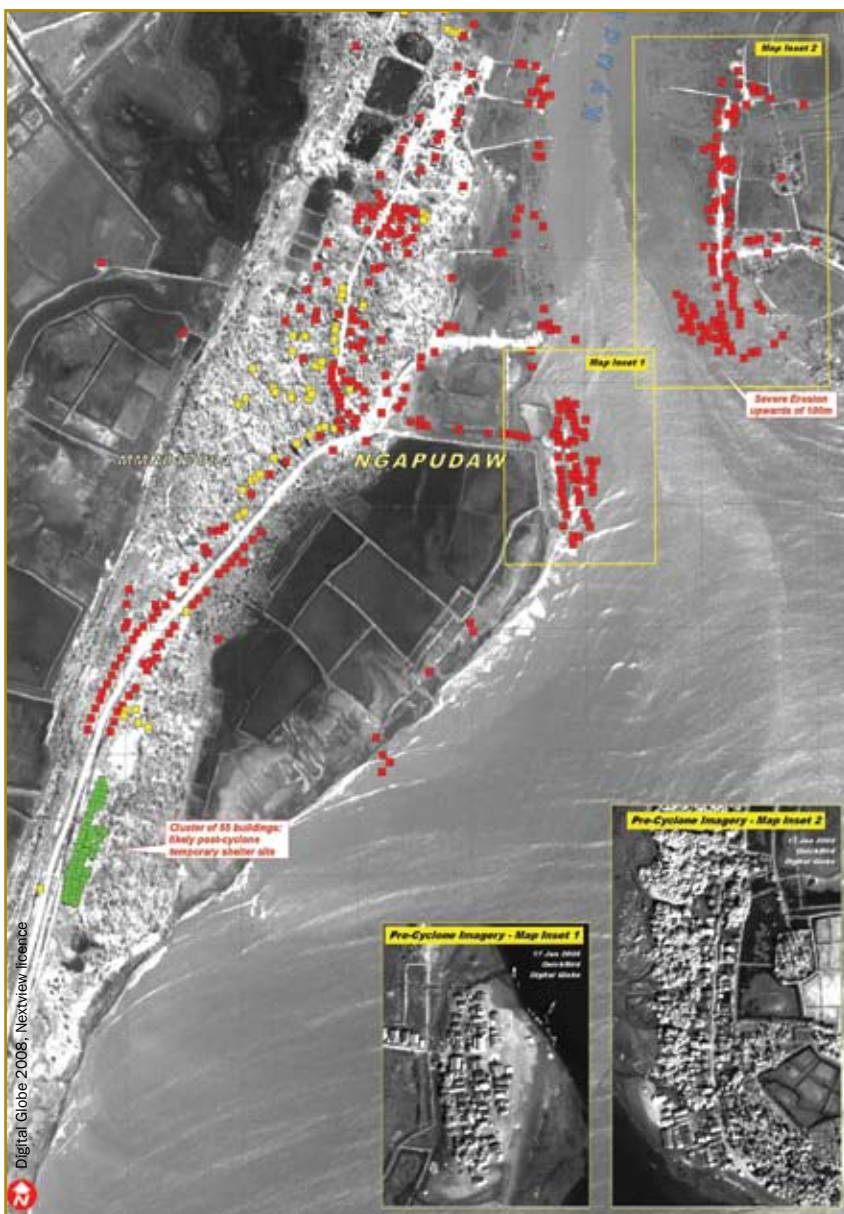
In protracted displacement situations, satellite tools can be used to monitor the situation, support intra-camp project activities or study the

installation of camp health and security features. When people are displaced from villages or camps by outbreaks of conflict, satellite imagery can provide a reliable tool to quickly assess the situation and the damage caused to infrastructure on the ground. The time saved in such cases is substantial, as is the advantage offered by acquiring visual references on the ground before deploying field teams and exposing them to unknown risk. In all other cases, satellite imagery can unlock information concerning areas that may be too remote, too large or simply under restricted access for security or other reasons. After a massive earthquake, for example, it is often impossible to know which roads are still usable unless satellite imagery is used. Lastly, good quality imagery can be used to assess and even investigate possible violations of human rights in the context of refugee crises or conflict situations.

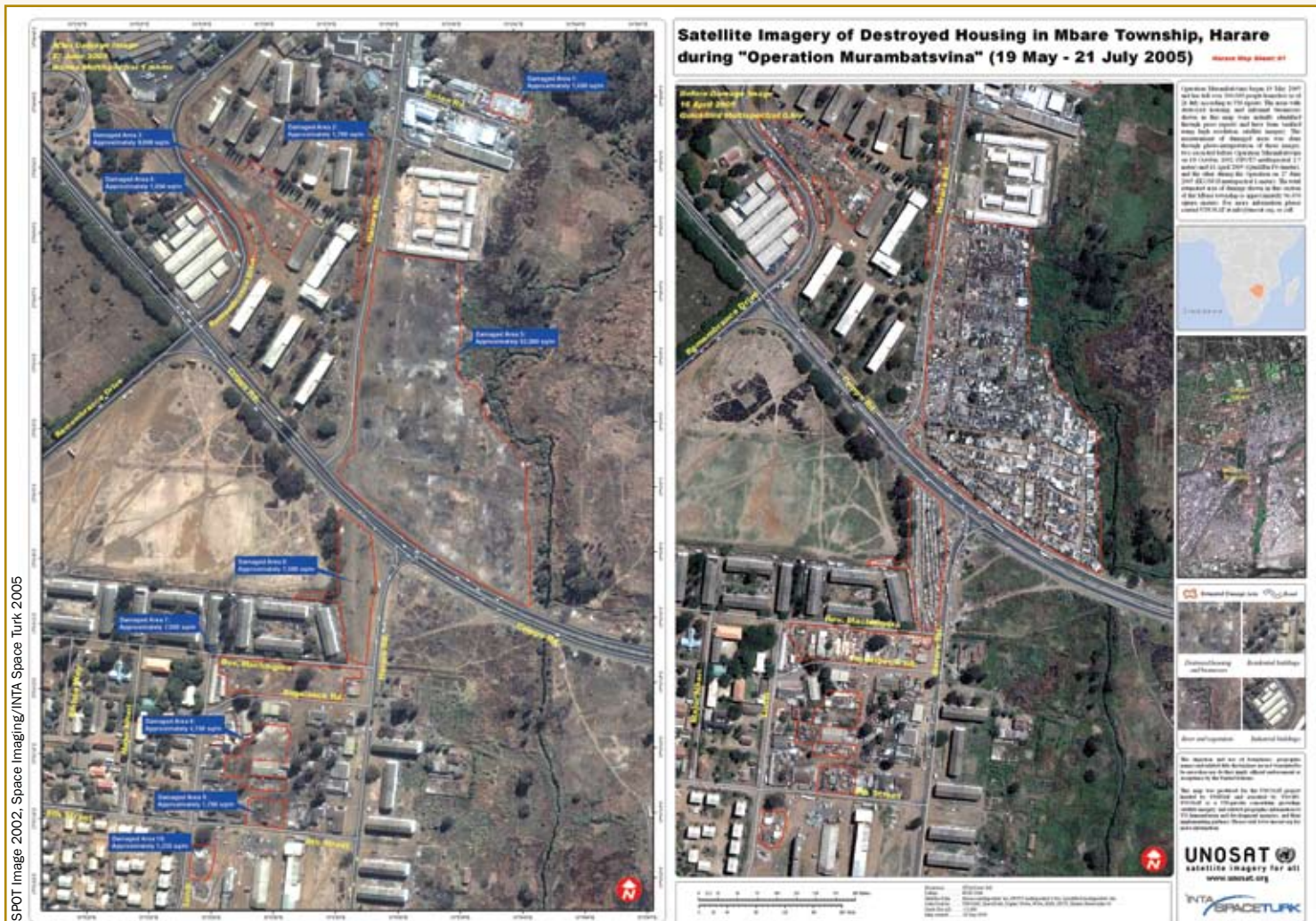
### Examples of use

Since 2001, UNOSAT – the UN Institute for Training and Research's Operational Satellite Applications Programme – has been providing satellite-based solutions to the UN family, IFRC, ICRC, NGOs and government agencies. One of the most recent and striking uses of satellite imagery was in the wake of Cyclone Nargis that struck Myanmar (Burma) in May 2008. Within hours satellite images indicated the path and impact of the cyclone. In the days that followed, UNOSAT provided a range of images (see left) indicating the extent of standing flood waters and destruction of villages.

In 2007, fighting in Lebanon forced the majority of the 27,000 Palestinian refugees living in the densely populated Nahr El Bared camp to flee, leaving behind some 3,000-5,000 refugees, including children, sick and the elderly. Humanitarian organisations were not allowed access to the camps but UNOSAT was able to provide detailed damage assessments. The information was used to monitor the humanitarian situation and provide evidence on







which the Lebanese government could base their requests for international assistance and funding for the affected population.

Operation Murambatsvina in Zimbabwe was a government-led campaign to clear slum areas during which over 2.4 million people, most notably urban and rural poor, were affected. The international community had limited access to the areas concerned. The above images from Harare, taken before and after the event, reveal the clearance of large areas (outlined in red) in several townships. As a result of the demolition of houses and small businesses, most of the residents had no option but to flee their homes.

Following Kenyan elections in late December 2007, disputed results caused widespread violence, both in the capital Nairobi and in the Rift Valley. More than 800 people were reported killed and many residential areas were torched.

Maps depicting locations of fires were rapidly produced and detailed damage assessments were made possible using satellite imagery.

In early February 2008, civil conflict in Chad forced a large number of people to flee the capital N'Djamena and seek refuge in neighbouring Cameroon. Satellite images were able to detect the presence of individual people crossing the border, making it possible to estimate the total number of people leaving N'Djamena for Cameroon at that time.

**Future potential**

A common misconception is that the cost of satellite-based solutions is very high. In fact, the cost has fallen steadily over the years and constitutes only a very small part of the overall budget of a humanitarian operation. Another common myth is that one can use satellite imagery to track the flow of people, for example refugees, moving on the ground. This is not correct as images taken by satellites

are snapshots collected only once per day at best. Conversely, past limitations such as the impact of cloud coverage have been overcome; radar satellites now allow us to see through clouds and at night.

In future, more satellites with higher level of details will become available for civilian use, thus further improving access to this valuable source of information. Imagery from space will not replace information collected on the ground but it is a useful complement to it, being objective, available when required and able to cover large areas.

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