

# Digital Storytelling from Above

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**Keywords:** digital storytelling, journalistic cartography, story mapping, remote sensing, satellite data

## Abstract:

“Imagery is the news” (Planet 2018). Defined as “the practice of acquiring information about the Earth from above its surface by satellite or aircraft” like planes, drones, or even kites (Mack 1990), remote sensing is an emerging mapping tool and storytelling device increasingly utilized in news cartography, data journalism, and investigative reporting. Applied to social and environmental stories like protests in Hong Kong (Robles et al. 2019), border and migration debates (Karklis et al. 2018), and sea-level rise (Egan 2021), digital storytelling from above offers insight into key challenges of our time and has been recognized with recent awards (Rajagopalan et al. 2020; Hernandez et al. 2020). Most recently, satellite data have notably been used to document geopolitical events like the fallout from the United States’ removal of troops from Afghanistan (Gamio 2021) and Russia’s invasion and bombing of Ukraine (Browne et al. 2022; Werbeck and Jones 2022) sparking online conversation regarding the techniques and ethics of mapping conflict (Westerveld 2022). As geopolitics and the impacts of climate change continue to intensify, maps in the news are critical storytelling devices for communicating global change to broad audiences.

This rise in “digital storytelling from above” results from the recent proliferation of satellite technologies both public and private (e.g., Planet’s Super Doves and NASA’s Landsat 9), the increase of high-resolution satellite data (e.g., sub-one meter resolution at daily temporal frequencies), and the availability of new tools with cloud computing capacities (e.g., Google Earth Engine). With 4852 satellites in orbit and roughly 1000 earth observation-specific satellites as of January 2022 (Union of Concerned Scientists 2022), remote sensing data are more accessible than ever given open satellite data streams from governmental agencies (e.g., NASA and ESA) and the expansion of commercial satellite companies (e.g., Maxar, Planet, and Airbus). The spatial, temporal, and spectral resolution of satellite technologies have also radically sharpened for both governmental and commercial actors, sparking partnerships across the industry. In addition, open-source tools like QGIS and GDAL along with advances in cloud computing and data retrieval technologies have transformed the reporting process. Yet, beyond the anecdotal expansion of digital storytelling from above, we know little about the contemporary role of satellite data in cartographic journalism and digital storytelling, and how it’s changed over time.

To fill this gap, we pose two questions: (1) How is remotely sensing used within data journalism and what are contemporary standards for its usage and (2) how has remote sensing in the news changed over time and what are the future possibilities for remote sensing in digital storytelling? We begin by reviewing relevant literature at the intersection of cartographic journalism (Monmonier 1989; Wallace 2016; Cairo 2019), maps and storytelling (Caquard 2013; Denil 2018; Kelly forthcoming), and satellite technologies (Duner 2015; Corcoran 2018; Bennett et al. 2022). Within this frame, we present an interview study to better understand contemporary practice and remote sensing in cartographic journalism over time. More specifically, we utilized a snowball sampling strategy to conduct semi-structured interviews with 26 journalists representing sixteen media outlets from June to November 2021. While a majority of our interviewees were based in the United States given our locales as researchers, five interviewees worked internationally in Hong Kong, Singapore, and the United Kingdom. Job titles for our interviewees spanned from cartographers, data journalists, graphics reporters, and news app developers to investigative journalists, editors, and graphics directors covering a range of beats from climate and the environment to race and policing. Interviewee experience ranged from less than six months to over twenty-five years. This range of tiered expertise allowed us to examine satellite data in the news from the makers (i.e., those making maps with satellite imagery), users/reporters (i.e., those using satellite data in their reporting process), and editors and directors (i.e., those making editorial decisions in the spirit of visual storytelling with satellite imagery).

Throughout our interviews and qualitative analysis, we utilized content (i.e., satellite data), form (i.e., cartographic language and storytelling), and process (i.e., mapping workflows) as three sites for interrogation. We organize and present our findings across content, form, and process as a toolkit for digital storytelling from above. For each tool in our toolkit,

we provide a description documenting advantages and use cases as well as critical questions and considerations geared towards journalists, students, and mapmakers interested in the use of remote sensing in cartographic journalism and mapping, more generally. We conclude by arguing that understanding the processes and people from which news maps are created and how such practices have changed is imperative for understanding everyday encounters with satellite technologies in the news and cartographic journalism.

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