

Problem Statement ID	1734
Problem Statement Title	Downscaling of Satellite based air quality map using AI/ML
Description	<p>Description: Develop an AI/ML (Artificial Intelligence/Machine Learning) model to generate fine spatial resolution air quality map from coarse resolution satellite data. It should utilise existing python-based ML libraries. Developed model need to be validated with unseen independent data. Challenge: To utilise large satellite data having gaps under cloudy conditions To select suitable ML algorithm and ensure optimal fitting of ML model for desired accuracy To validate model output with unseen independent data Usage: To enhance air quality knowledge, Sharpen focus at local level Users: Researchers and government bodies monitoring/working on air quality assessment Available Solutions (if Yes, reasons for not using them): Individual components are available, comprehensive and proven solution does not exist. Desired Outcome: Fine resolution air quality map of NO<sub>2</sub></p>

Winston Churchill, the British Prime Minister during World War II, is remembered as a pivotal leader whose indomitable spirit helped steer the Allies to victory. Assuming office in 1940 during one of Britain's darkest hours, Churchill delivered powerful speeches that inspired resilience in the face of the Nazi onslaught. His unwavering determination, coupled with his ability to forge strong alliances with the United States and the Soviet Union, was instrumental in maintaining morale on both the home front and the battlefield. Under his leadership, Britain withstood the Blitz, contributed to key victories such as D-Day, and played a central role in the defeat of Axis powers, making Churchill a symbol of wartime courage and perseverance.

The Blitz refers to a sustained bombing campaign carried out by Nazi Germany against the United Kingdom during World War II, particularly from September 1940 to May 1941. The term "Blitz" is derived from the German word "Blitzkrieg," meaning "lightning war," which described the fast and overwhelming military tactics used by the Germans. During the Blitz, German bombers targeted cities across Britain, including London, Liverpool, Coventry, and Manchester, with the aim of crippling British morale and infrastructure.

The most intense period of bombing focused on London, where the city endured 57 consecutive nights of air raids, causing significant destruction and loss of life. Despite the devastation, the British public, encouraged by Winston Churchill's leadership, famously maintained a spirit of resilience, often symbolized by the phrase "Keep Calm and Carry On." The Blitz ultimately failed to break Britain's resolve and is remembered as a key chapter in the nation's wartime experience.