



NYU

TANDON SCHOOL
OF ENGINEERING

Population and Vegetation Trends in Nuclear Disaster Affected Regions - Chernobyl and Fukushima

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01/30/2022



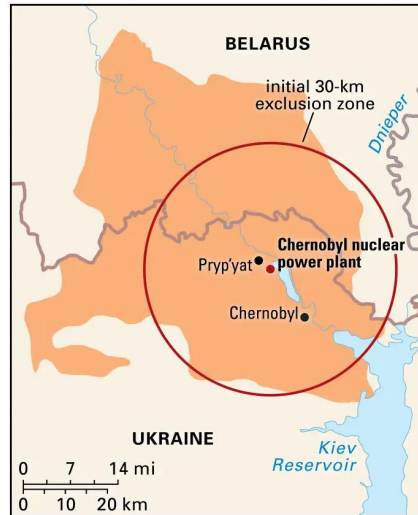
Rhodes, J., 2022. *Has US Nuclear Power Reached Its Half-Life?*. [online] Forbes. Available at:

<<https://www.forbes.com/sites/joshuarhodes/2020/02/17/has-us-nuclear-power-reached-its-half-life/?sh=4f666ad82cf5>> [Accessed 31 January 2022].

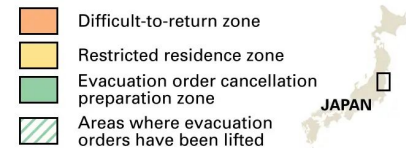
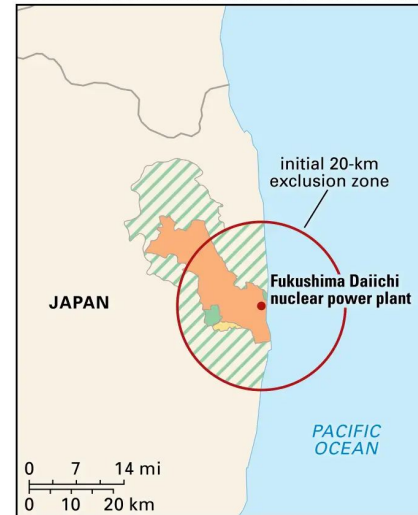


NUCLEAR EXCLUSION ZONES

CHERNOBYL NUCLEAR ACCIDENT OF 1986



FUKUSHIMA NUCLEAR ACCIDENT OF 2011

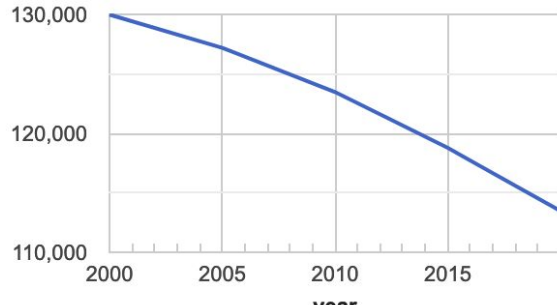


Rafferty, John P.. "Nuclear Exclusion Zones". Encyclopedia Britannica, Invalid Date, <https://www.britannica.com/story/nuclear-exclusion-zones>. Accessed 31 January 2022.

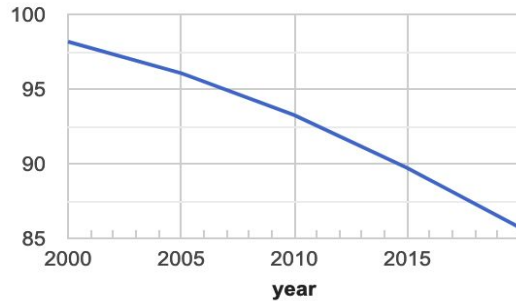


Exclusion Zone Population and Population Density

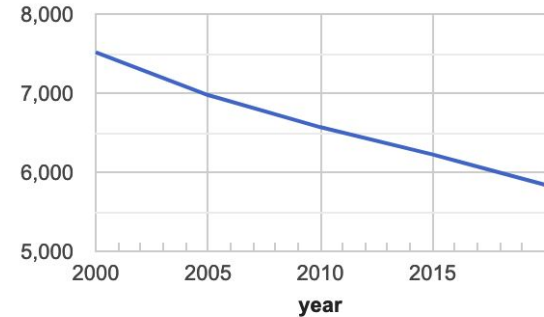
Fukushima - Total Population



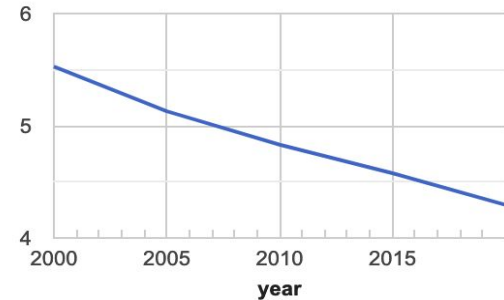
Fukushima - Population density



Chernobyl - Total Population



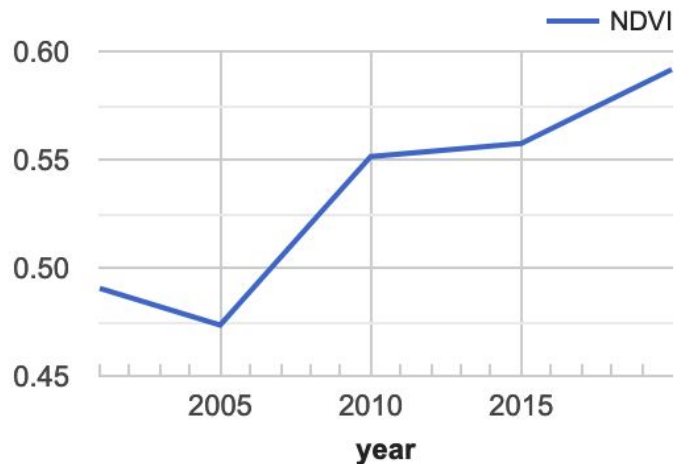
Chernobyl - Population density



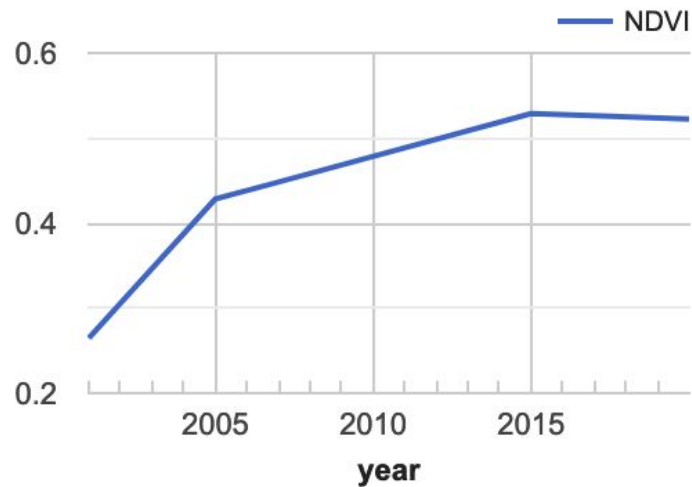


Exclusion Zone Vegetation

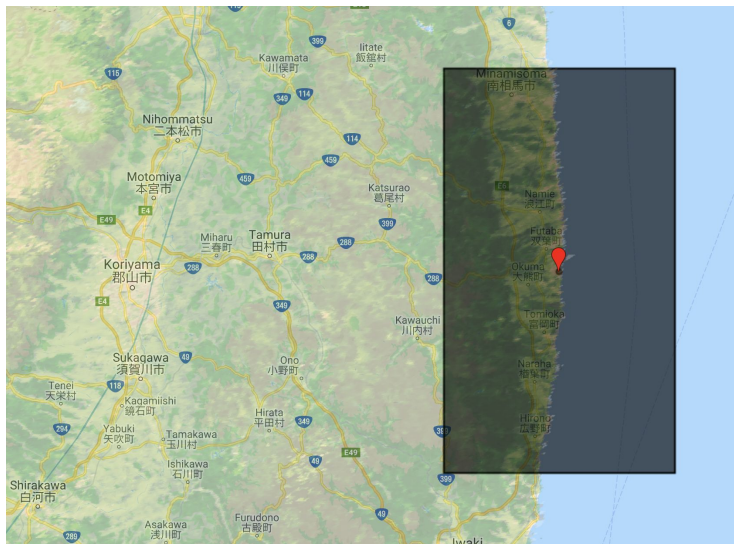
Fukushima - Vegetation (NDVI)



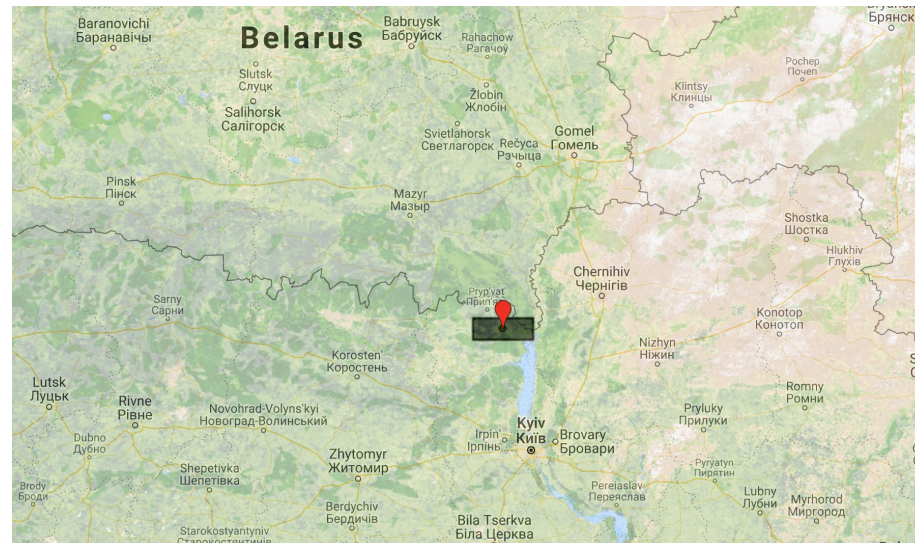
Chernobyl - Vegetation (NDVI)



Exclusion Zone Vegetation (NDVI - 2015)



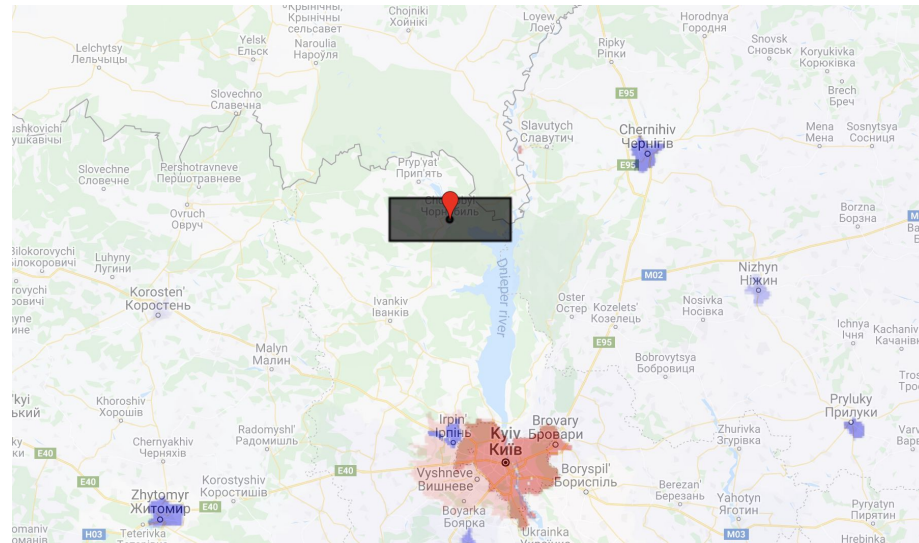
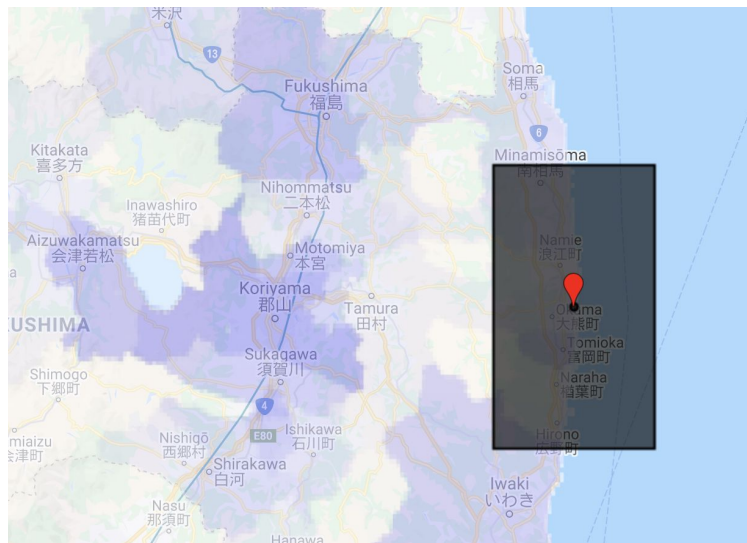
Location: (37.42133, 141.03253)



Location: (51.2763, 30.2219)

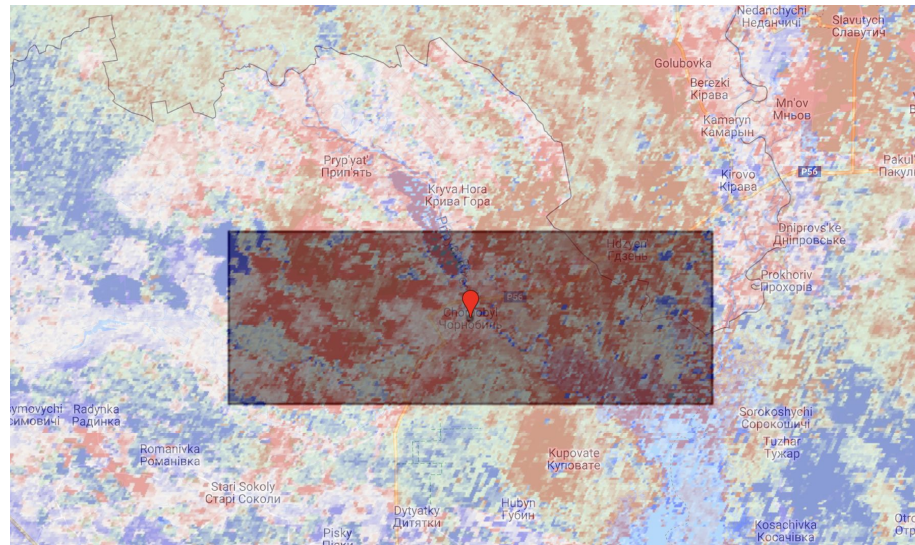
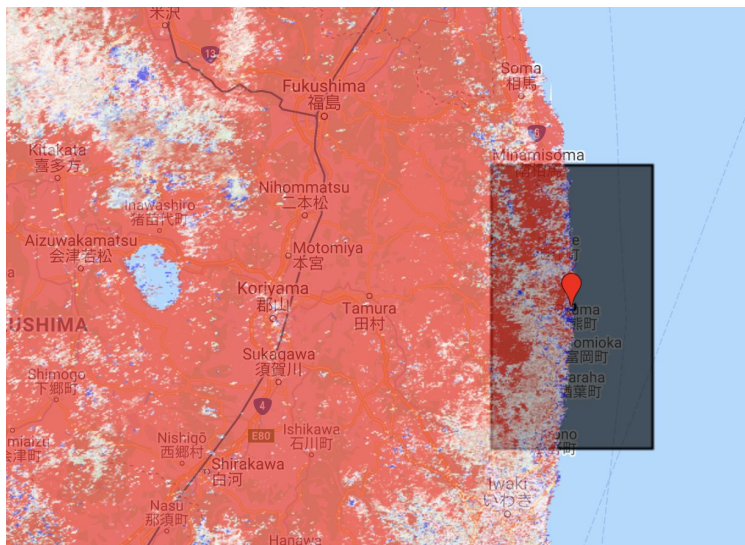


Exclusion Zone Population Difference (2000- 2020)





Exclusion Zone Vegetation Difference (2005- 2020)



Didan, K. "MOD13Q1 MODIS/terra vegetation indices 16-day L3 global 250m SIN grid V006 [data set]. NASA EOSDIS LP DAAC." (2015).



- It can be observed that nuclear disasters lead to a drastic reduction in the human population in neighbouring areas due to harmful effects of the radioactive chemicals released in the environment. Governments implement exclusion zones as a result of this.
- In Fukushima, we notice that some of the plant life is affected for a period immediately after the Tsunami that caused the nuclear disaster. But, there are no signs of stunted growth due to radiation.
- In Chernobyl, we notice a constant increase in mean NDVI values for the ROI.
- These observed values align with the fact that radioactivity has not been found to harm vegetation.
- As the Chernobyl disaster occurred in 1996, all population and population-density values observed from 2000 are post-disaster and thus very small.