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| **Case study: tropical storm** | | | **Case study drought** | |
| Hurricane Matthew  Started at 13.5'N of the Equator.  Catergory 5/5 on the Saffir Simpson Scale.  160 mph winds  7th October (hurricane season)  Started in off west coast of Africa | | | **California, USA. Developed country, 2020-2022**  **Causes of drought: Hydrological drought-** an unusual lack of water caused by a reduction in water stores (e.g. reservoirs, ground water stores). Water was over abstracted here. | **Sudan, Sahel, Developing Country, frequent since the 1970s. 2015 very serious.**  **Causes of drought**: meteorological drought - – an unusual lack of water caused by a lack of precipitation  Agriculture also wastes water.  Deforestation reduces the amount of transpiration. |
| Emerging | Developed country | | Impact | Impact |
| **Physical causes of destruction:** Lightning sprites in Pueto Rico  Low lying coastal areas affected.  **Impacts**  **Haiti** – recovering from an earthquake 6 years ago, it did not have the infrastructure to protect it's population. 175,000 people made homeless and children were separated from their parents. £1.89 billion cost. 90% houses on the southern coast destroyed. (fewer on the west). Health clinics and schools were closed or short staffed. Roads were blocked limiting supply.  **Cuba**.  Fishermen ignored warnings to stop fishing.  3m storm surge  2.1 million effected.  Bahamas | **Physical causes of destruction**: 500mm of rainfall in N.Carolina caused widespread flooding prior to the storm – saturating the land making the later storm surges even worse.  **Impacts**  Low lying coastal area S.Carolina saw high winds and waves caused flooding in Charleston, leading people stranded. In the south east nearly 1.6 million homes and businesses lost power. High winds caused trees to fall, disrupting the biodiversity in the area.  In Florida there was property damage which totalled at least $1.492 billion in damage.  The state of Virginia saw heavy rains and high winds which caused record flooding on the beaches of Virginia and Lago Mar.  $10 billion in damages  40 people died | | wildfires are regular, subsidence caused by a lack of water in the ground stores below, sea water flows into the empty aquifers, further damaging the fresh water supplies. | Conflict , 8.5 million people affected, most people work in farming – so to lose crops is to lose income  Famine, Typhoid – caused by drinking dirty water |
| Responses | | | Responses | Responses |
| **Responses** in the region;  Satelite monitoring of the region led to the cancellation of flights, closure of schools and stockpiling and supplies, and mass evacuation  Evaluation of this – the poorest communities with bad communication infrastructure, were not warned quickly or effectively. | | | Water transfer from nearby Colorado river  Hose pipe bans  Desalination (turning sea water into fresh water by treating it). – this is expensive and bad for the environment as the salt is pumped back into the sea which damages marine ecosystems. | Magic stones –circles of stones are placed on the ground to hold water on the soil rather than let it run quickly across the surface. Planting trees – increasing transpiration, creating rain |
| **Colombia** – postponed election, homes boarded and goods were stockpiled.  **St Lucia** – no expectation of being impacted. Flights were cancelled and schools were shut  **Jamaica** – fisherman called to return to the mainland. 900 shelters built. Homes boarded up and sandbags filled. 100 female prisoners were relocated. Toll fees for bridges which allowed people to escape were waivered. Airport and public transport schedules were cancelled. The army was deployed. Schools and government buildings were closed. National arena used for evacuation.  **Dominican Republic** – 8,500 people evacuated  **Cuba** - >1 million evacuated, medical staff sent to high risk zones. Supplies were stockpiles and schools were closed. 218 shelters opened.  **Haiti** – school shelters set up – not enough to house their population. 18,000 volunteers from charities to support. US aid and UN aid came in for pre-disaster response. Many people refused to leave and were buried in rubble. | | USA – state of emergency declared along the S.West tip. |