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Global Conversation

Can big data save lives? Protecting Hong Kong against air pollution and extreme weather

Hong Kong Observatory

Monday 15 April 2019

Introduction

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Chinese University of Hong Kong

Co-Directors of the CUHK-Exeter joint centre in Environment Sustainability and Resilience (ENSURE)

Outline

- The role of big data in addressing environmental challenges
- Examples
  - Air pollution and health
  - Extreme weather events
- The future…
- Panel discussion: Q&A

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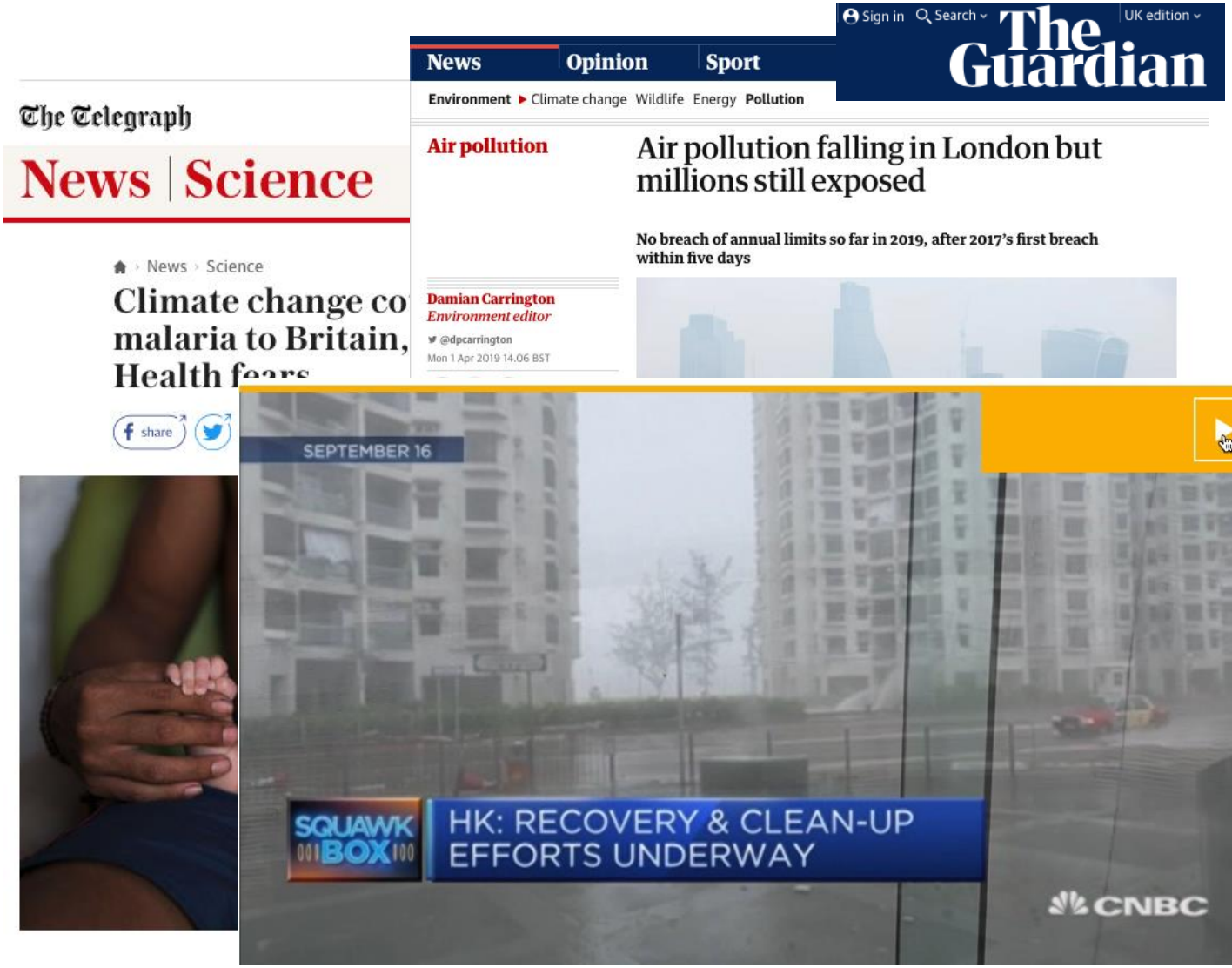
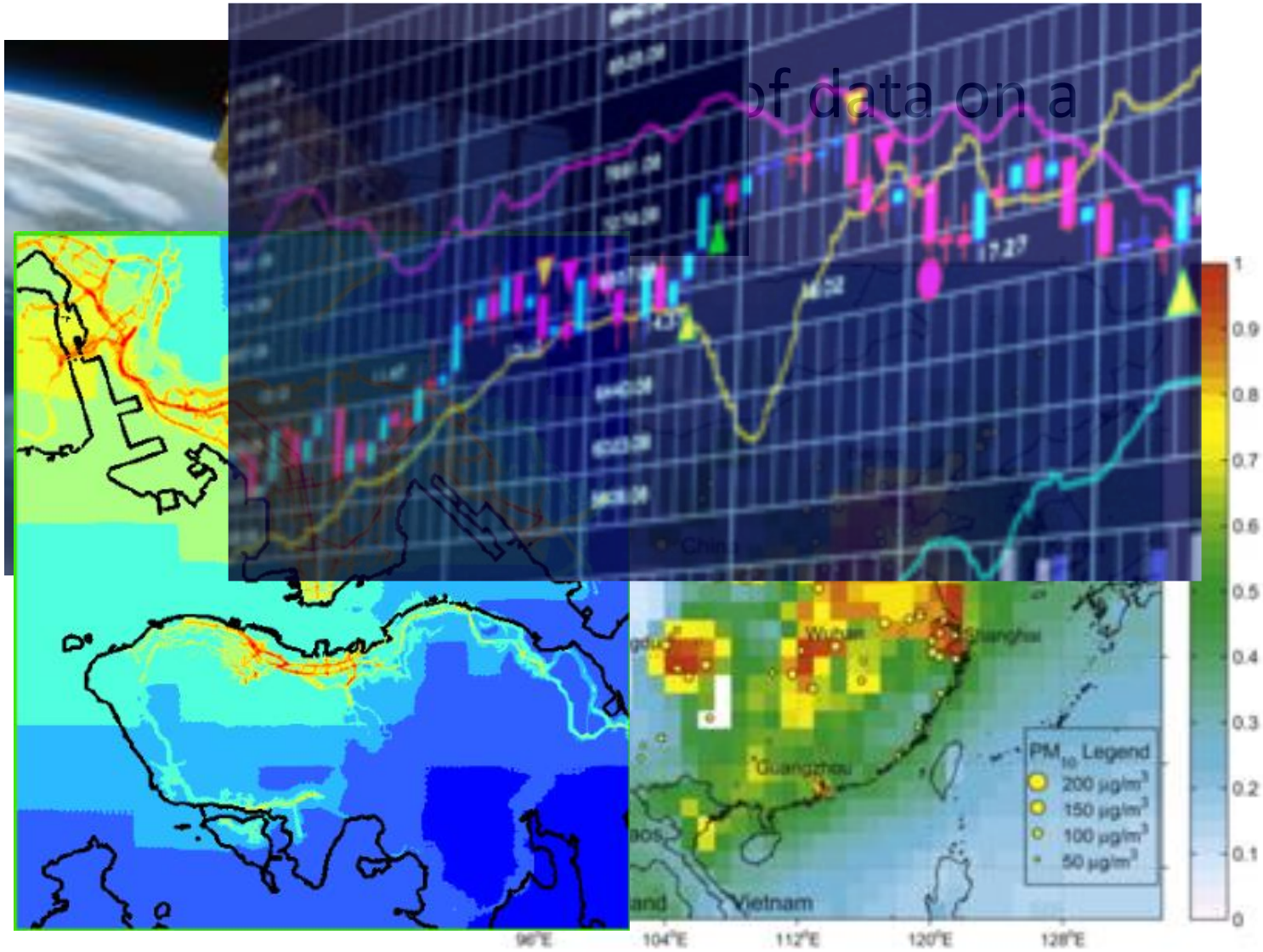
The role of big data in addressing environmental challenges

ENVIRONMENTAL CHALLENGES



AND BIG DATA



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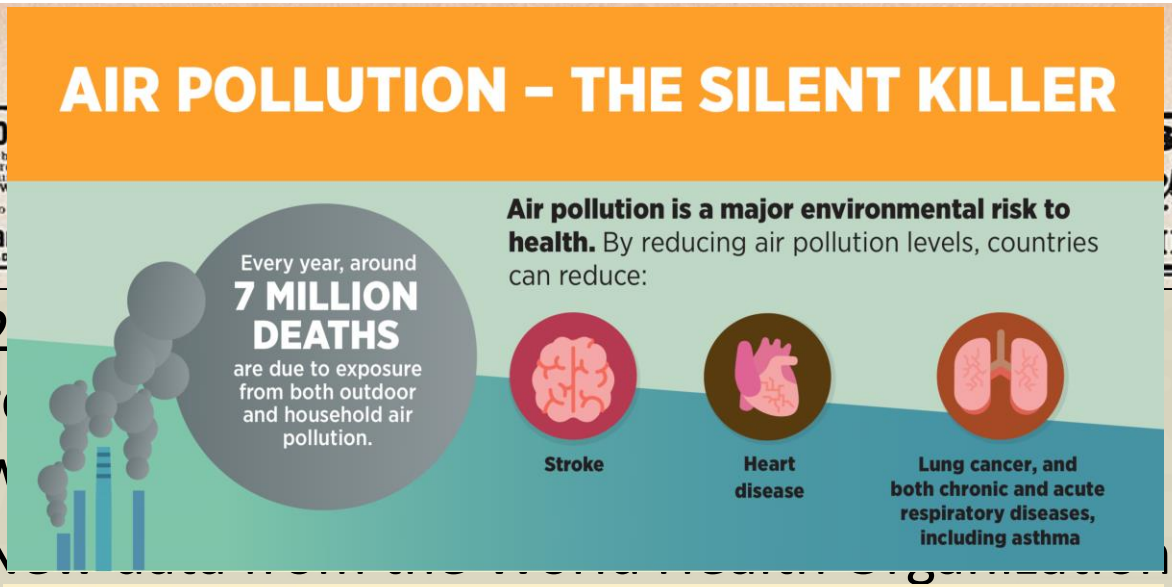
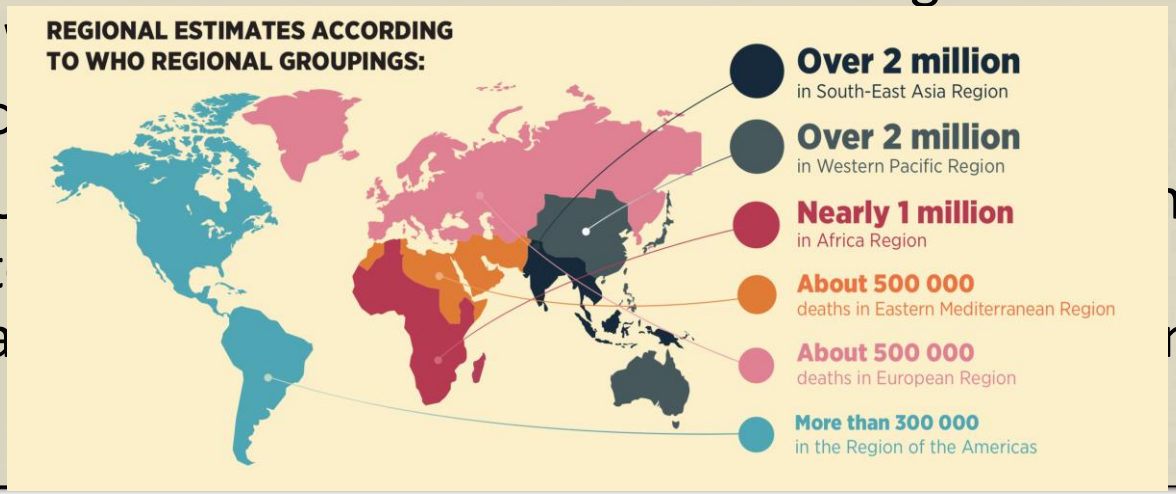
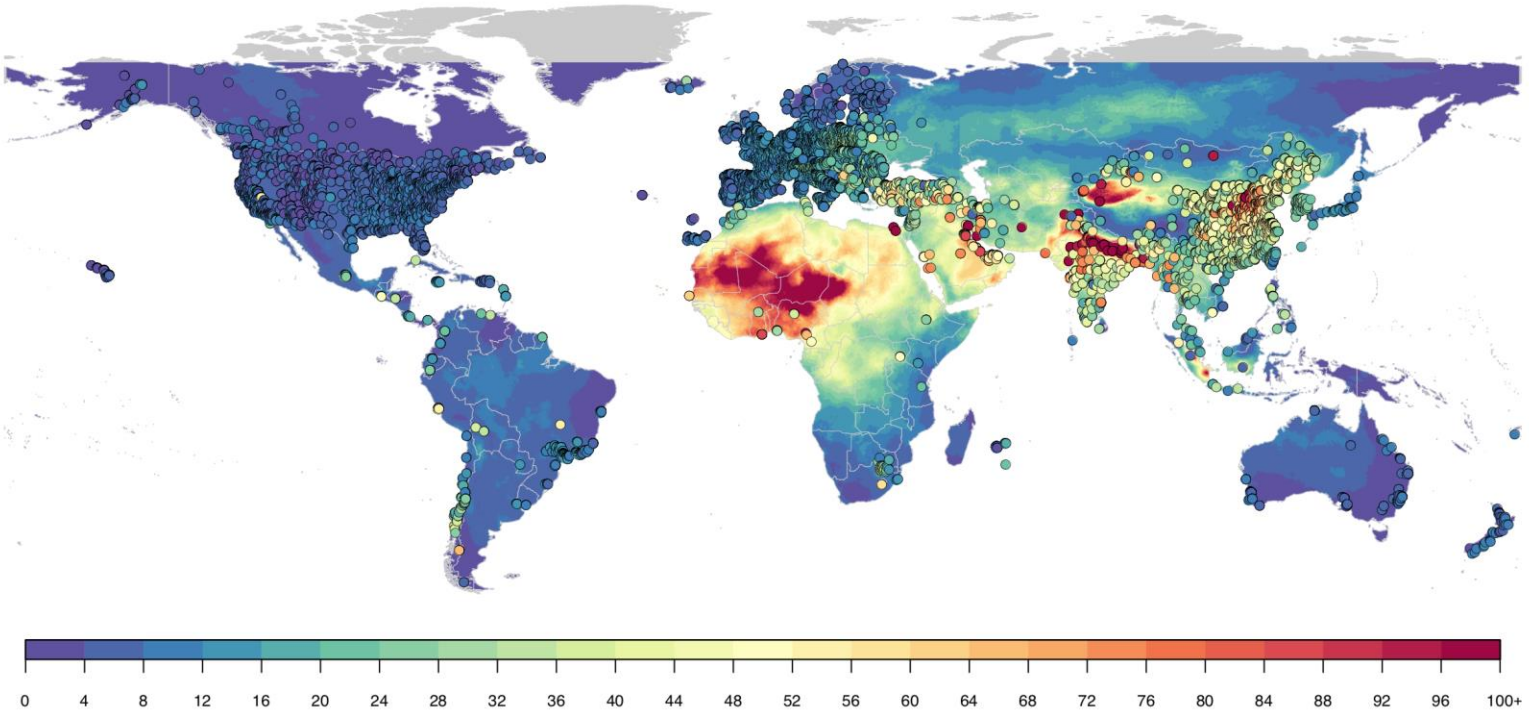
Example: Air pollution and health

AIR POLLUTION AND HEALTH





GLOBAL AIR POLLUTION



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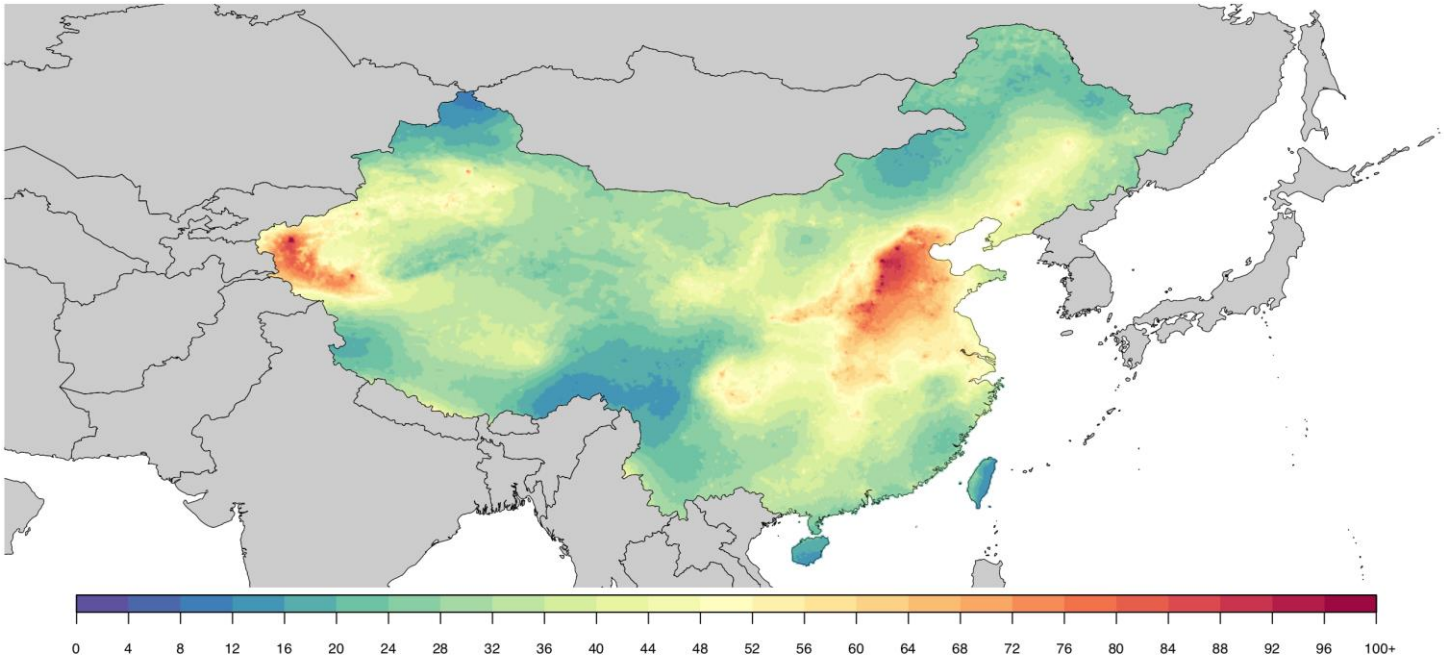
CHINA



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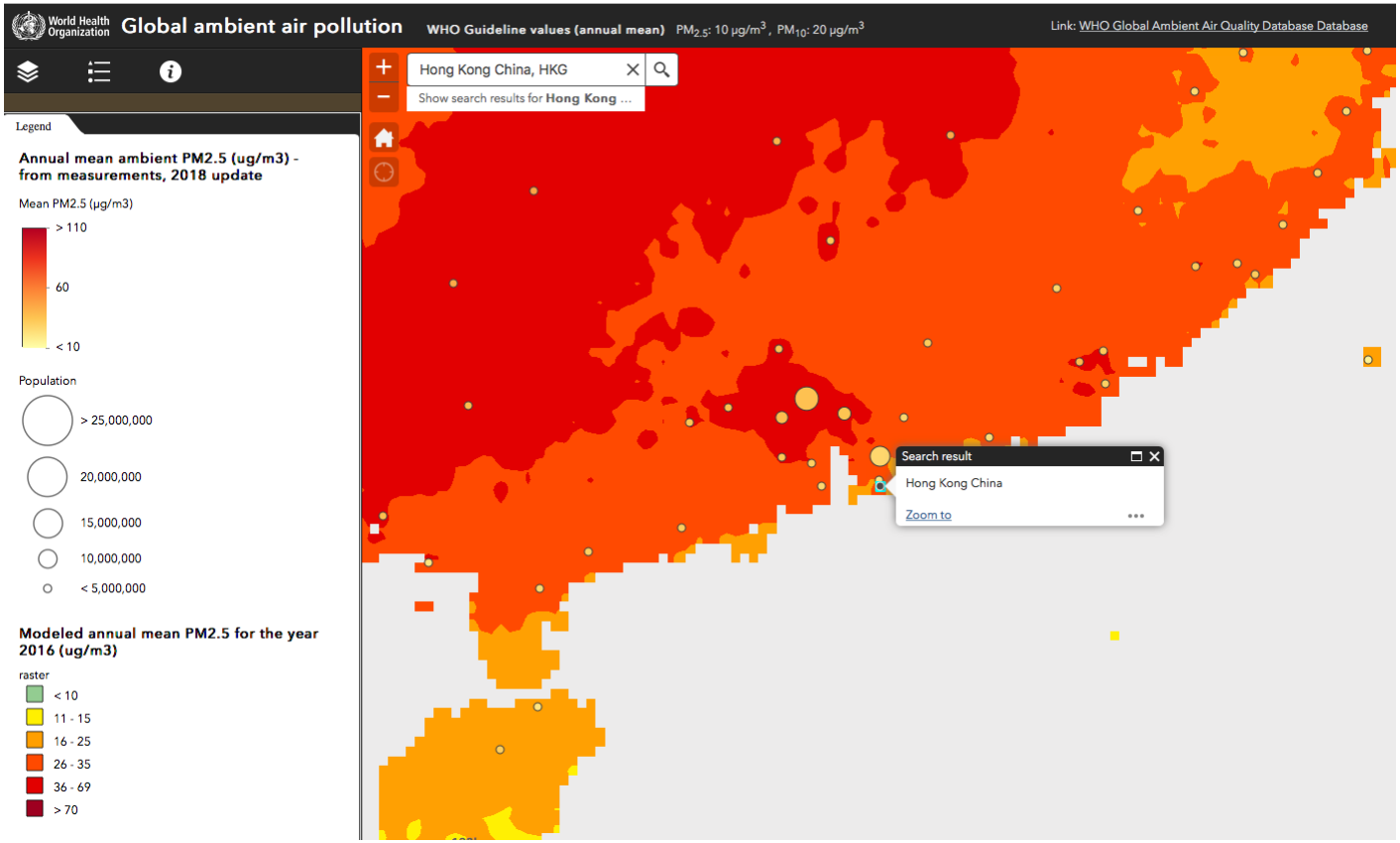
HONG KONG



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World Health Organization

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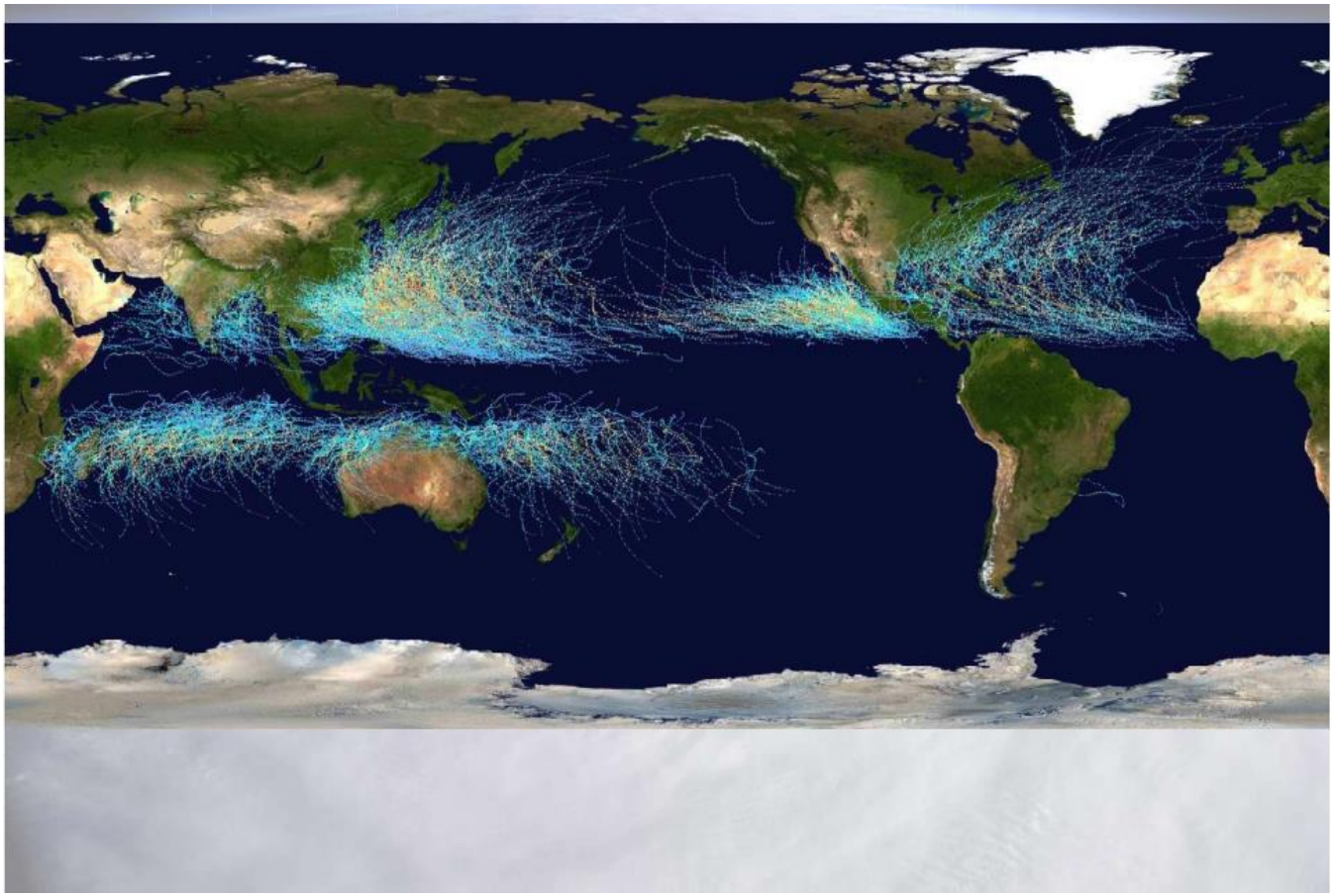
Example: Extreme weather events

TRACKS OF ALL TROPICAL CYCLONES, 1985-2005



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SUPER TYPHOON MANGKHUT
16TH SEPT 2018

INTERACTIVE MAP OF STORM DAMAGES BY MANGKHUT

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CLIMATE MONITORING IN HONG KONG

- Hong Kong Observatory Headquarters
  - Since 1884

- King's Park Meteorological Station
  - Since 1951

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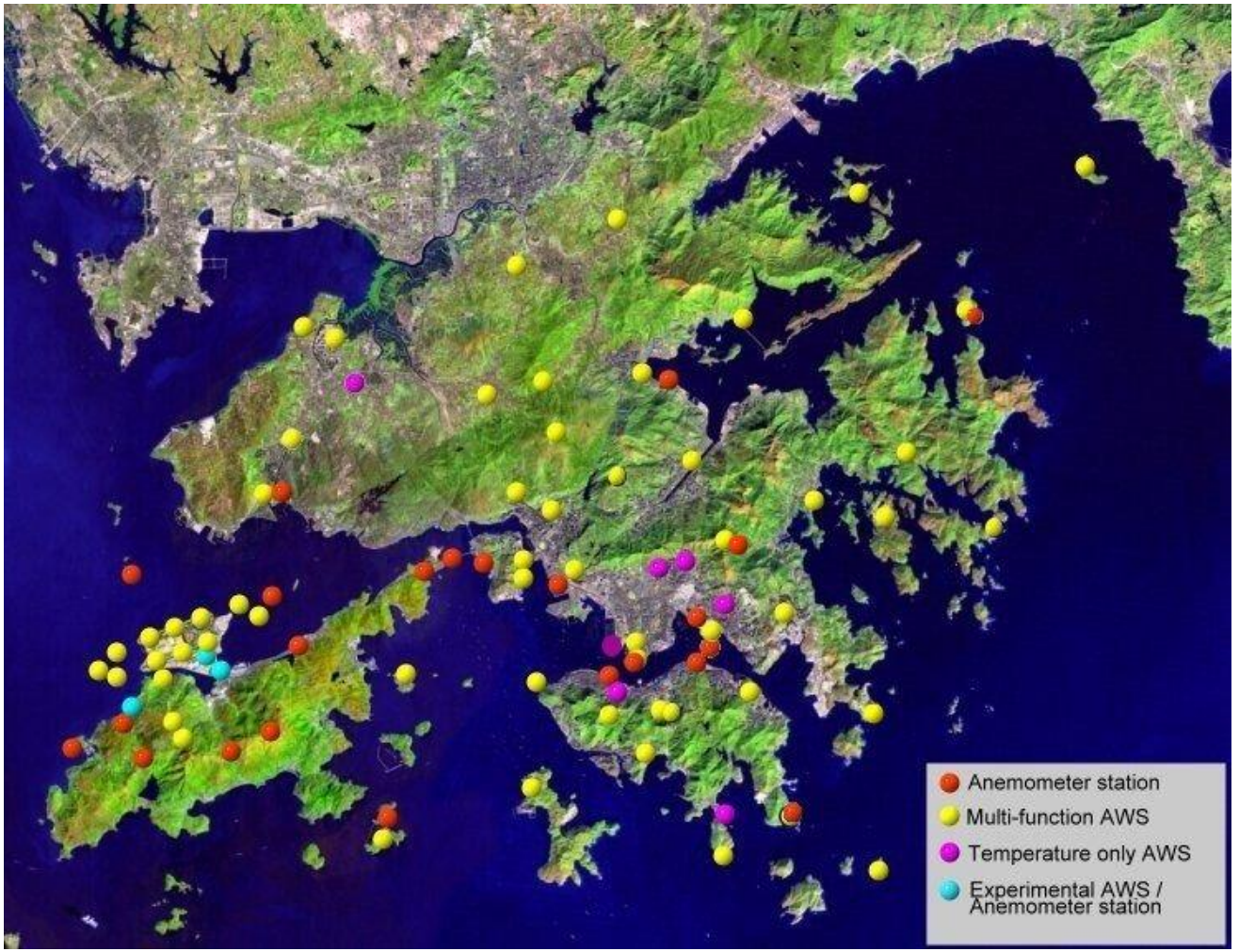
COVERAGE OF MONITORING NETWORK



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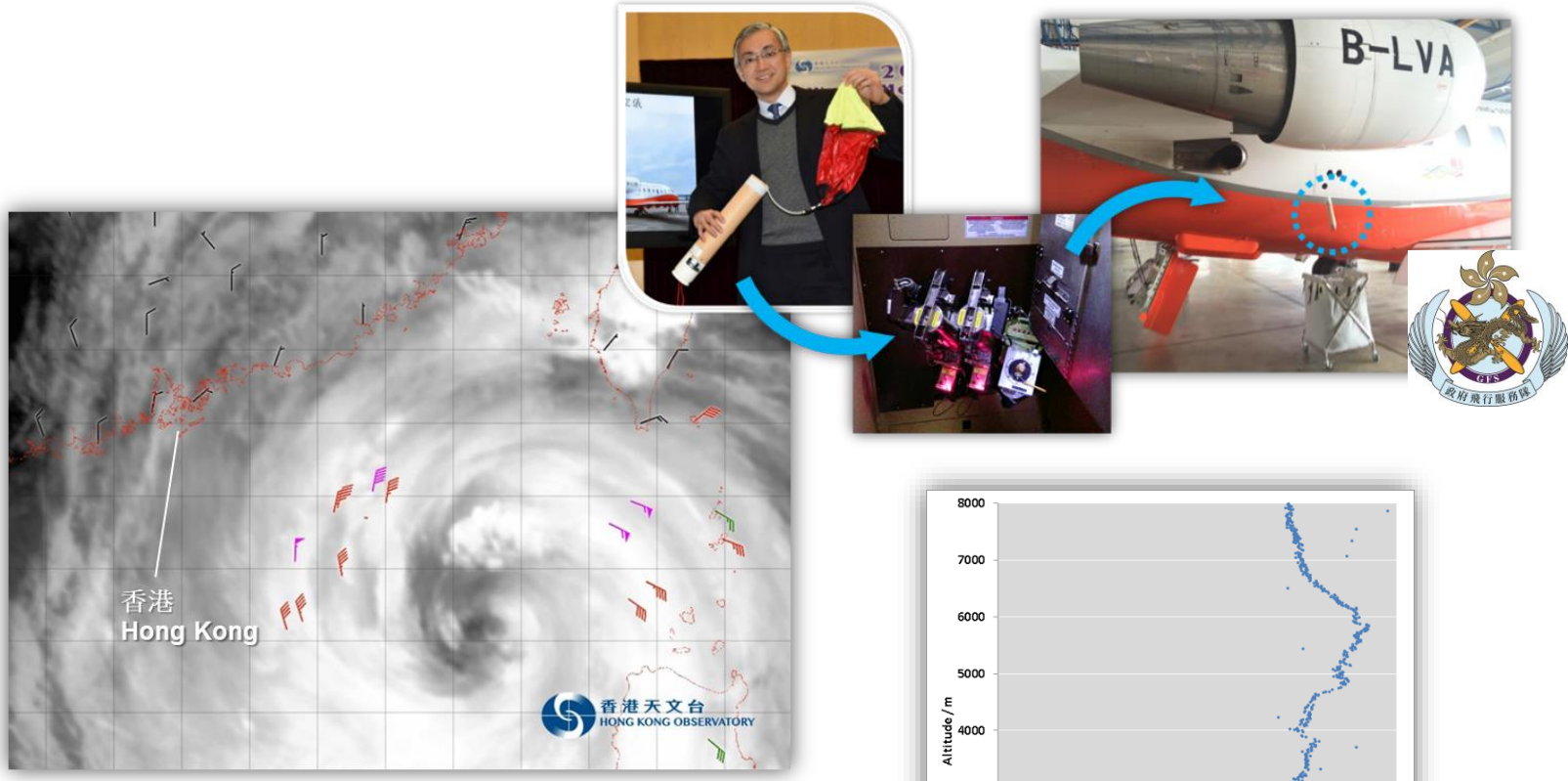
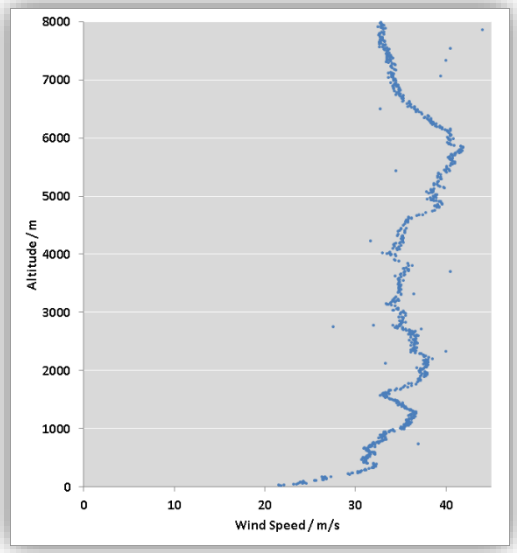
COLLECTING DATA USING AIRCRAFT DURING TROPICAL CYCLONES



Super Typhoon Mangkhut (2018)

Vertical distribution of meteorological data collected by the Hong Kong Observatory during dropsonde missions over the South China Sea on 15 September 2018



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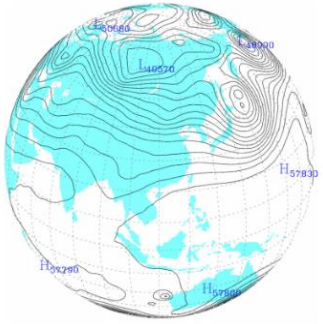
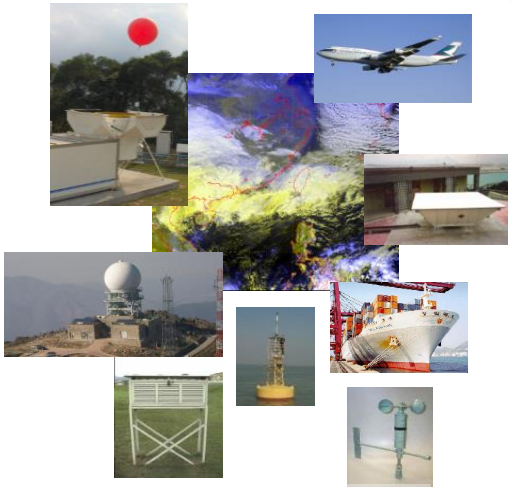
NUMERICAL WEATHER PREDICTION

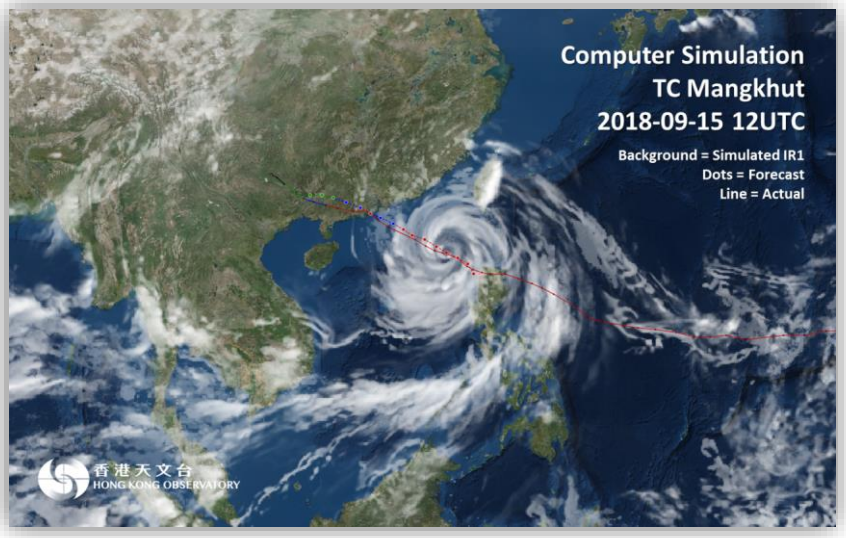


Boundary Conditions from
Global Atmospheric Models

High-Performance
Computers



Global/Regional
Observation
Networks



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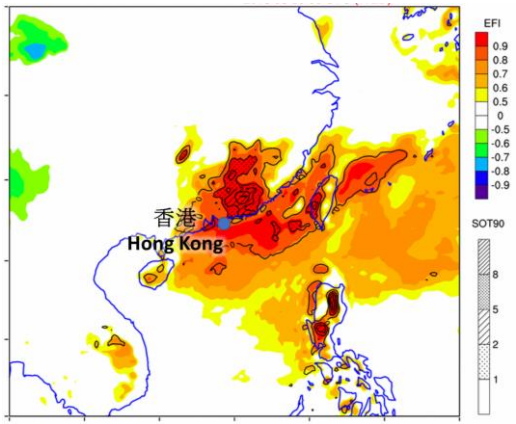
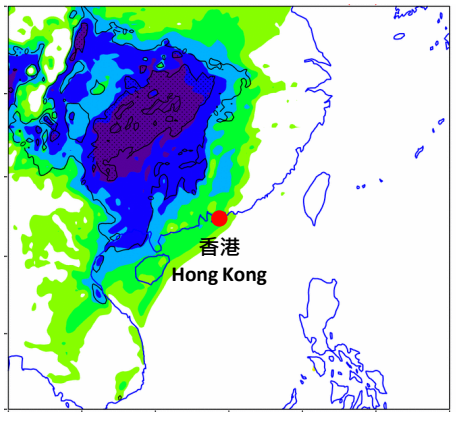
ENSEMBLE FORECASTS

Extreme Forecast Index for extreme temperatures

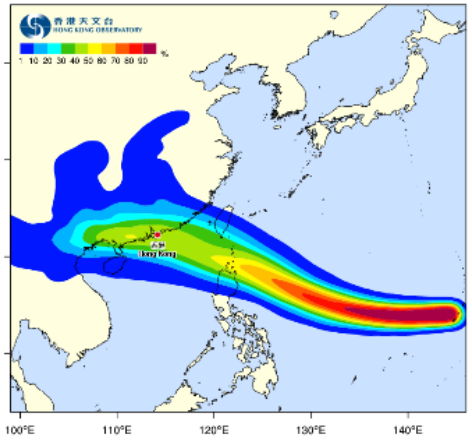


Forecast of extreme hot temperatures in southern China in late May 2018



Forecast of extreme low temperatures in central and southern parts of China in late December 2018

Tropical Cyclone Track Probability Forecast



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The future…

SOCIAL MEDIA AND SMART PHONES

The 6 Best Apps to Monitor Air Quality in Hong Kong

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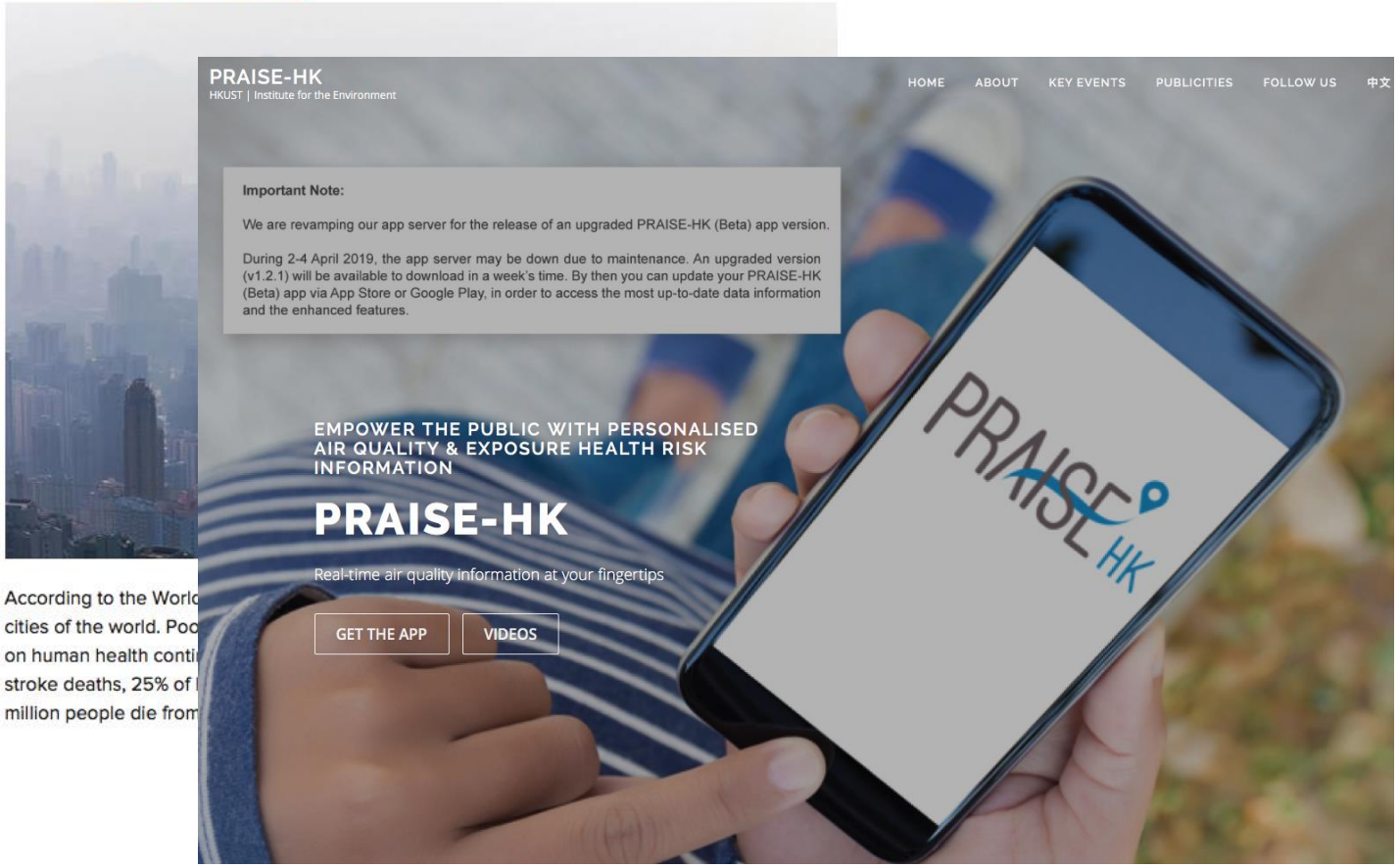

According to the World
cities of the world. Poo
on human health conti
stroke deaths, 25% of
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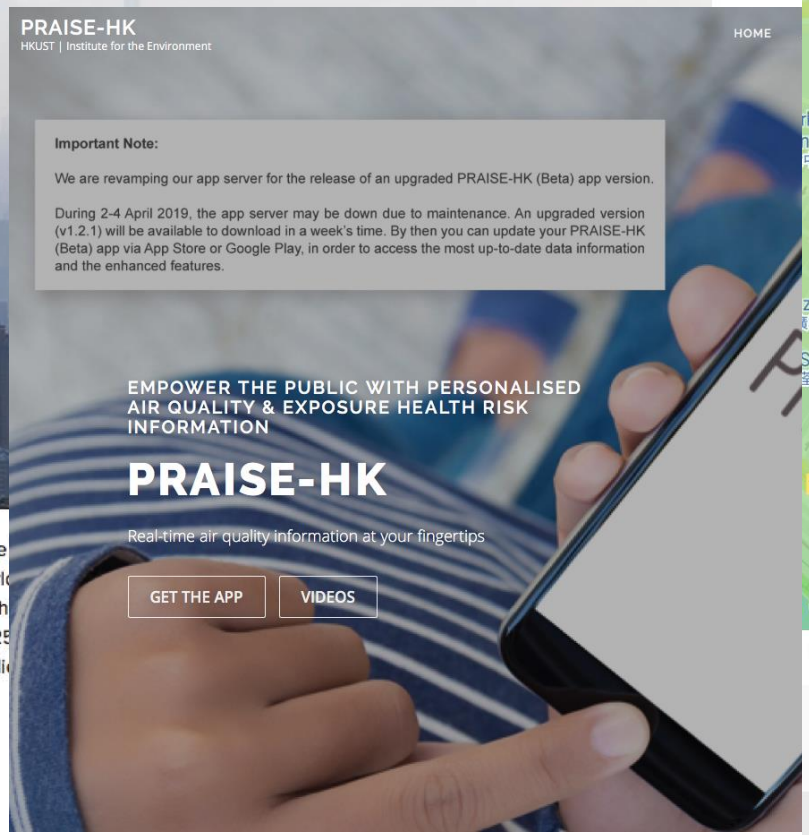
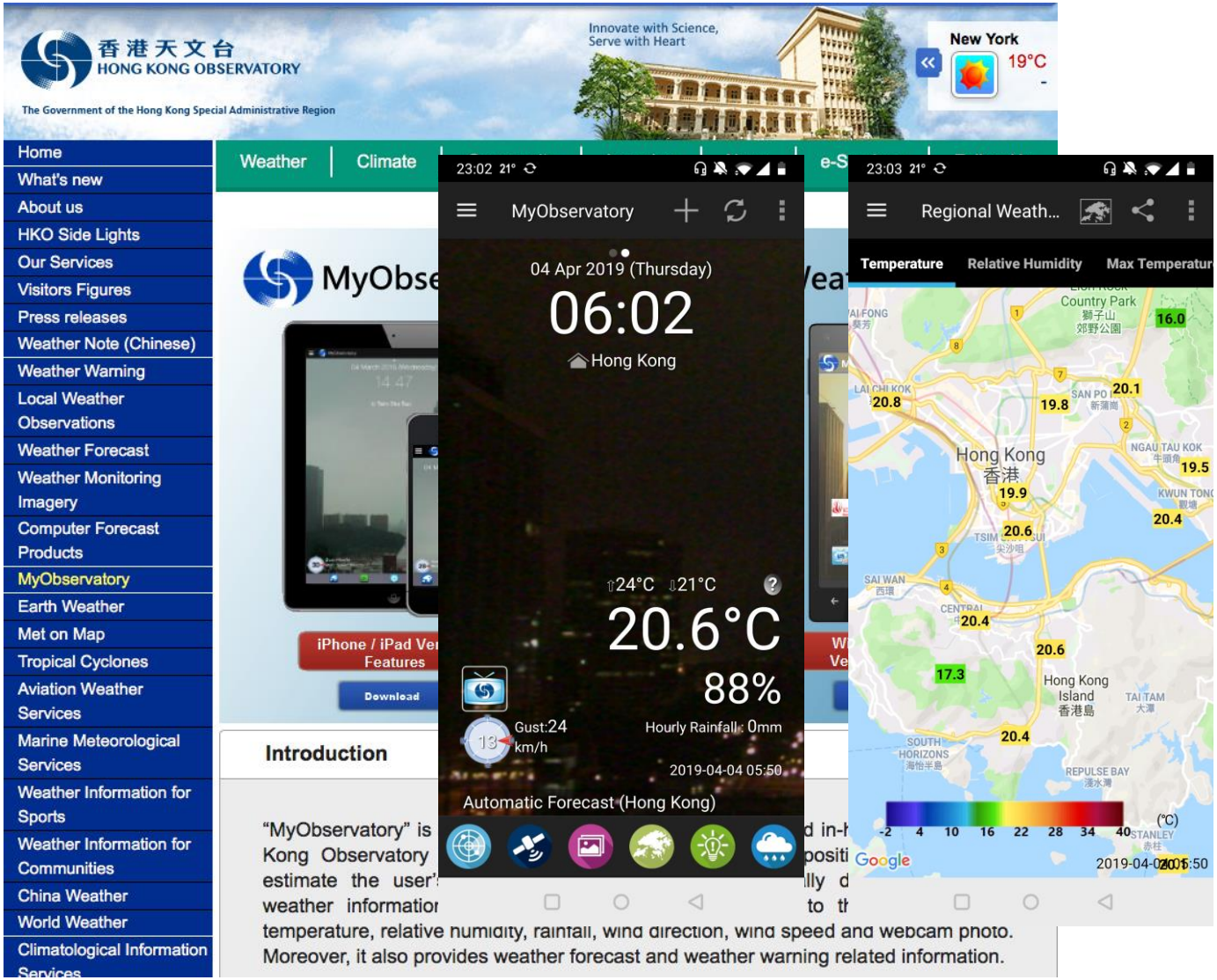


SOCIAL MEDIA AND SMART PHONES



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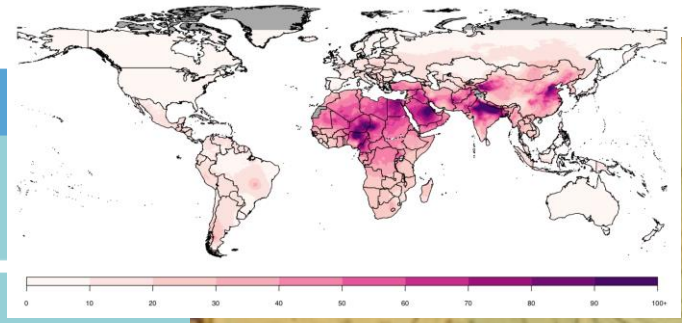
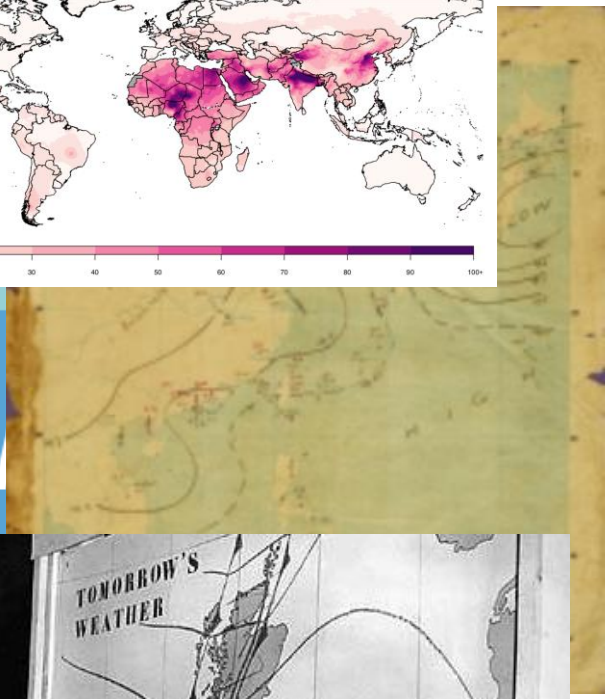
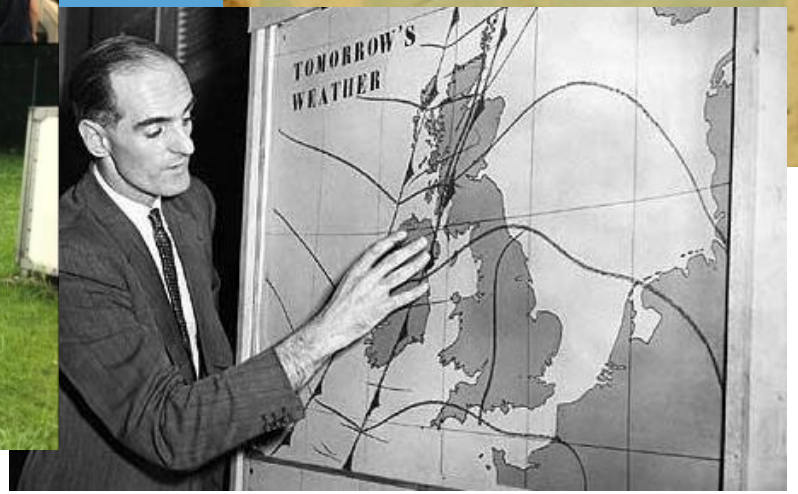
A CAUTIONARY TALE

Data Scienc
needs to be
with knowl
environmer







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So, can big data save lives?

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Professor Gabriel Lau

Chinese University of Hong Kong

Director CM Shun

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Ted Hodgkinson

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