Weather and Climate Big Data

기상기후빅데이터

Introduction

오승민

Spring 2025

About Me

Env. Engineering
Hydrometeorology

ERP Systems
Env. IT consulting

Deep learning
Big data Analytics

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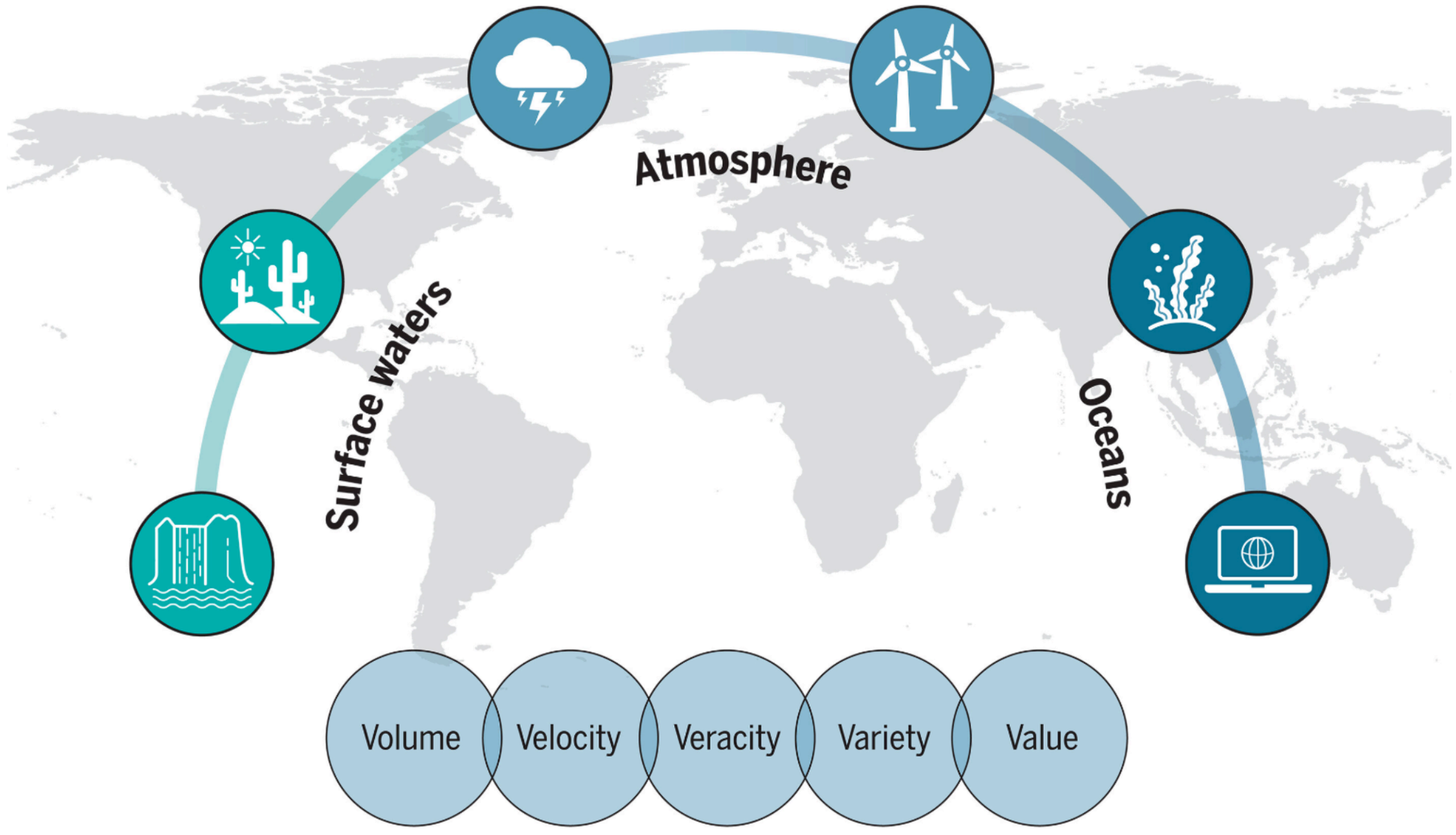
Big Data

- Big data refers to extremely large and diverse collections of structured, unstructured, and semi-structured data that continues to grow exponentially over time (https://cloud.google.com/).
- Big data refers to massive, complex data sets that traditional data management systems cannot handle (http://www.ibm.com/).
- Big data is often describe by five characteristics: volume, value, variety, velocity, and veracity.

Weather and Climate Big Data



10.1126/science.adh9607

Learning Objectives

<u>Upon successful completion of this course, you will be able to:</u>

- understand the basic concepts of big data and the unique characteristics of weather and climate data.
- acquire and analyze real-world weather and climate datasets.
- get excited about the field of weather and climate science.

Course Overview

Week	Topics	Notes
1	Introduction	
2	Introduction to Big Data 1	
3	Introduction to Big Data 2	
4	Weather and Climate Big Data	
5	Data Exploration and Preprocessing	
6	Data Exploration and Preprocessing	
7	Report Planning and Preparation	중간고사(퀴즈)
8	***Mid-term***	보고서 계획안
9	Data analysis and modeling	
10	Data analysis and modeling	
11	Results Interpretation and Visualization	
12	Results Interpretation and Visualization	보고서 초안
13	Weather and Climate Data Applications	
14	Weather and Climate Data Applications	기말고사(퀴즈)
15	***Final-term***	최종보고서

Course Information

- **Time/location:** 월 6,7교시, 목 2교시 / 공학관 305호
- **Lecture information and syllabus:** 이루리캠퍼스
- **Evaluation:** 중간고사 30% 기말고사 45%, 과제 20%, 출석 5%
- **References:** 강의 슬라이드, 빅데이터 분석기사
- **How to reach me:** 이루리캠퍼스, e-mail, by appointment

Course Information

- **휴보강 일정:** 5월 5일(월), 5월 12일(월)에 휴강 예정 -> 보강 일정은 **이루리 캠퍼스**에 모두 공지합니다.
- **과제 및 보고서:** 학기말에 **최종 보고서 제출**을 목표로, 학기 중 과제 및 실습을 통해 보고서의 계획, 수정, 보완 과정을 진행합니다.
- **스터디 그룹(동아리): 빅데이터 분석기사 자격증** 준비를 희망하는 학생들의 그룹 스터디를 지원합니다.

Working with Python

- We will use Python to collect and analyze sample data, including for hands-on exercises.
- Programming exercises will be conducted in Google Colab using Jupyter Notebook.