1. **Project Goals**

Two top goals: Develop open-source computing capacity...

1. to increase quantitative learning in EOAS courses, &
2. enhance computing & math abilities of EOAS students.

Five goals in support of the top two:

3. Develop & test sustainable cloud computing facilities
4. Produce documentation, resources, guidelines, tutorials
5. Support faculty adopt consistent opensource practices
6. Support the FoS minor in Data Science and DSCI 100
7. Introduce open education materials & practices

2. **Project Contributions**

1. Python & Jupiter Notebooks (JNBs), new or replacing MatLab.
2. Dashboards: Interactive apps for learning or demonstrations.
3. Data gathered about students’ & instructors’ experiences.
4. Consulting re. content, learning, pedagogy, or logistics.
5. Resources: Guidelines for Python, JNBs, GitHub, dashboards, etc.
6. Faculty Pro: COVID - mainly on 1-on-1 consulting.
7. Dissemination: 6 UBC events; 5 events beyond UBC.

3. **Impacts: Courses & Deliverables**

20 courses participated: ~2900 students affected, 2020 - 2023.

4. **Engaging with data & concepts (all students)**

**Targeting goal 1:** Build & deploy interactive dashboards using opensource computing techniques.

**E.g.**
- Explore CO2 vs. time at Hawaii & Antarctica, then learn pros & cons of linear modelling.

5. **Computing for EOAS students**

**Targeting goal 2:** Transform courses to Python & opensource practices. (Challenges/costs depend on scope of changes.)

**E.g.**
- Explore CO2 vs. time at Hawaii & Antarctica, then learn pros & cons of linear modelling.

6. **Services & resources delivered**

- Adjustments to 20 courses: Tables 1, 2, 3 below.
- Jupiter notebooks & opensource tactics: Table 4.
- Dashboards as Open Ed Resources:
  - 17 apps built, 11 courses now use them
  - Focuses students on concepts & real data.
  - Interesting is growing, but slowly (faculty polling)
- Consulting for instructors/TA’s (pedagogy & logistics):
  - Course adjustments involved 1-1 support
    - TLEF → Instructor &/or TA
    - TA → instructor
  - Workflows for opensource tools & tactics.
- Department and institution
  - J-Hubs reliability & scalability: OpenSource community knows how.
  - Dashboard servers: in-house, docs being prepared.
- Resources - https://eoas.ubc.github.io
  - Guidelines for students & instructors
  - Assessment management
    - Auto-grading for EOSC 211 & DSCI 100
    - Questions: Text/MarkDown → Canvas
  - Open Education Resources (OERs)

7. **Take Home Messages**

- Transforming courses to Python:
  - Beginner’s courses are challenging & “costly”.
  - Others straightforward if converting assig only.
  - Hubs for JNBs must be “bomb-proof” & scalable.
- Dashboards
  - Attractive & “low-stakes” for most instructors.
  - Can be straightforward or challenging to design/build.
  - Need in-house server technology and skills to host.
- Educational expertise keeps the focus on learning and pedagogical best practices.
- Future interest?
  - Of 78 courses in EOAS, 32 use or hope to use opensource computing resources.
  - Results of polling EOAS faculty:
    - Few who are not already using computing want to.
    - Inspiration is needed; showcase successful examples; show details of costs & benefits.

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