Cloud and Cloud Shadow Masks (and maybe snow and water)

- Why?
  - Common impediment to use of data, particularly as move toward time series
  - Improves utility of many scenes with significant cloud cover
  - Not really necessary for compositing …
- How?
  - Many people have worked on a variety of different approaches -- often for different purposes:
    - Not spatially explicit - estimate the proportional coverage of clouds as feedback to LTAP (ACCA, for example)
    - Spatially explicit (maps, or masks) used to know which data to exclude from analyses

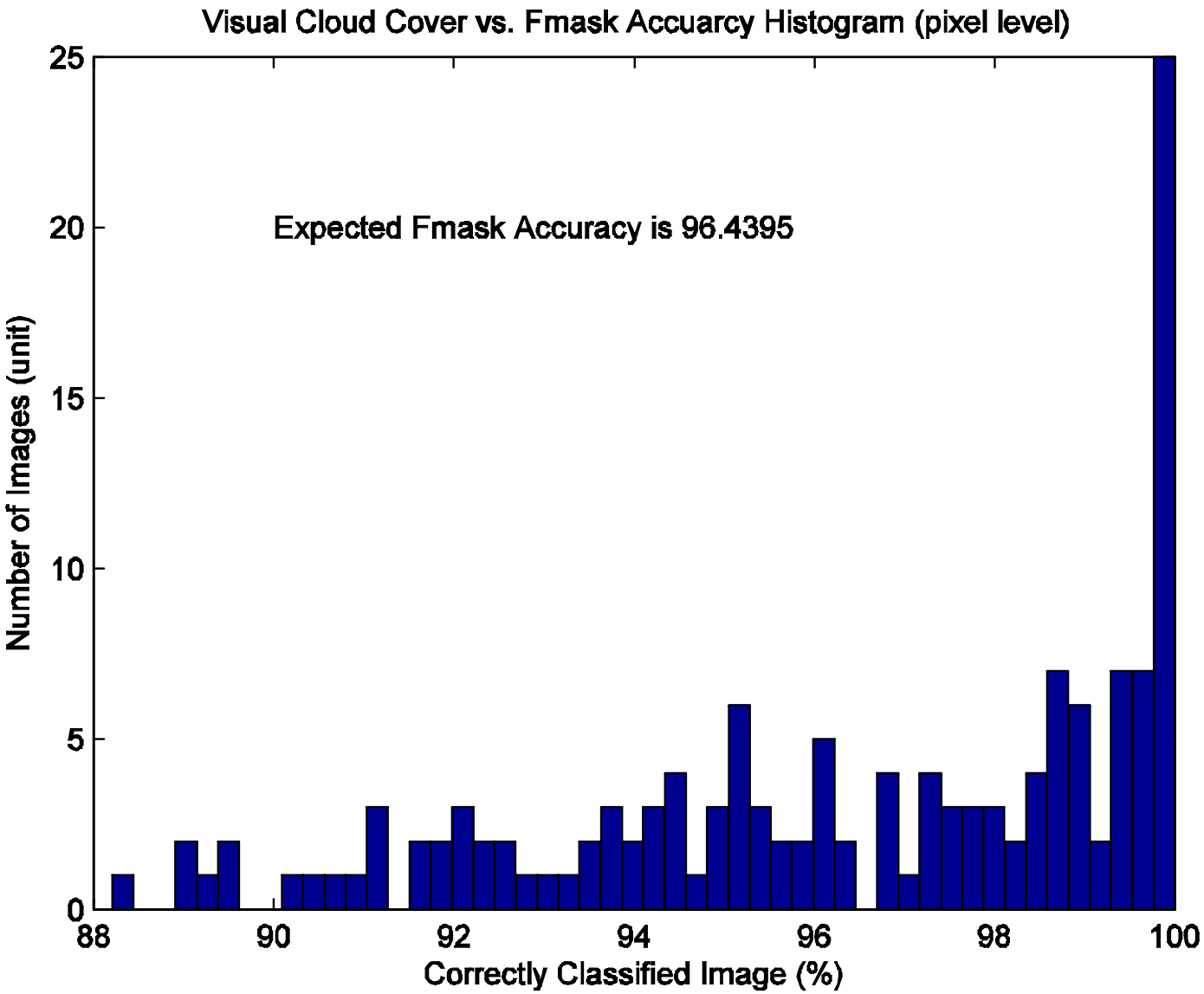
How? (cont)

- Many approaches - no understanding of which one, or which combination of approaches is most accurate
- How are we going to make progress toward an answer?
  - A **Cloud Bakeoff -** comparison of results from any variety of approaches on a common dataset
  - Existing dataset of “cloud truth” developed originally for testing ACCA
  - Dataset not perfect … (designed for a different purpose -- overall estimate of cloud cover)
  - Dataset is what we have ….

Zhe Zhu’s example

- Used 144 of the original 212 landsat scenes (one’s he considers the “truth” data to be most accurate) for clouds
- Used 27 landsat scenes for shadow
- Overall accuracy, user’s and producer’s accuracy for clouds (errors of omission from the cloud and shadow classes are a bigger problem than errors of comission)

Overall accuracy results (Zhe Zhu)



Zhe Zhu's Mistake

- He has offered to pull together the results of whatever algorithms people want to test and analyze them to see where various approaches agree, disagree, and so forth. Is there a combination of methods that is most accurate, and if so, why? Maybe we can build a single algorithm based on the strengths of a number of approaches
- Need to decide on a time frame for the comparison -- how about we give anyone interested 2 months to submit their results?

Remaining Question

- Can we get away with a single date approach, or will we get better results looking at a time series of images?
- Existing dataset doesn’t support comparisons between single date approaches and use of a time series
- We’re willing to develop some “cloud and shadow” truth data for a few examples of images in places where we are building time series -- it would be a big help to us if other people would include these images in their single-date tests
- If single-date approaches work as well as the multidate approaches, then I’ll shut-up about the use of a time series approach!