The image rate/image size tradeoff:  

...what is best for visual search?

Summary
- You are lost in the wilderness and need to be found
- An Unmanned Aerial Vehicle (UAV) with a downward-facing camera is flown
- A sensor operator on the ground looks for you within the transmitted camera image
- We investigated a novel means of presenting the terrain image captured by the camera:
  - full-screen terrain segments at a rate analogous to the flight speed
  - smaller segments shown for correspondingly shorter times
- Twelve volunteers observed six sequences and tried to find human targets
- Six segmentation degrees were investigated, from 108 ms/tile to 3878 s/tile
- Identification rates did not differ markedly between segmentation degrees
- We also identified a clear and distinctive change in visual search strategy

Target Identification Accuracy

The effect of segmentation degree on target identification accuracy, averaged over all participants and all trials.

Six Segmentation Degrees

- **Segmentation Degree 1**
  - Tiles: 15
  - Rate: 3878 ms/tile

- **Segmentation Degree 2**
  - Tiles: 60
  - Rate: 970 ms/tile

- **Segmentation Degree 3**
  - Tiles: 135
  - Rate: 431 ms/tile

- **Segmentation Degree 4**
  - Tiles: 240
  - Rate: 242 ms/tile

- **Segmentation Degree 5**
  - Tiles: 375
  - Rate: 155 ms/tile

- **Segmentation Degree 6**
  - Tiles: 540
  - Rate: 108 ms/tile