

## A GLOBE THAT FILLS THE SKY: GEOGRAPHY FROM THE SPACE SHUTTLE

THOMAS D. JONES

*Main engine cutoff! Eight and a half minutes of rocket-borne acceleration were suddenly over. The tremendous jolt of leaving the launch pad . . . the clang of empty booster rockets shearing away at Mach 3 . . . the steady build of g-forces to a chest-squeezing three times the force of gravity. And now . . . silence. We were in orbit at Mach 25, hurtling around the planet at a speed of 8 km every second, and the engines were, at last, quiet. I unzipped a glove and let it slowly twirl in front of my helmet faceplate. We were in free fall.*

*Unstrapping from my downstairs seat, I grabbed a camera and floated awkwardly toward the flight deck to photograph our departing fuel tank. On the way, Endeavour's hatch window beckoned—the temptation to take a peek was too much for me. My reflection greeted me in the dark glass as I searched for my first glimpse of Earth from space. Peering through the looking glass, I wondered what I would see—after nearly four years of training, and a lifetime of dreams, what would geography really look like?*

*No textbook could have prepared me for my personal discovery of the planet's face. A dark silhouette cut through the night sky, blotting out the stars. Its edge was rimmed with a delicate, robin's-egg blue, marking the literal end of the world and the beginning of my reeducation in geography. It would be a lesson I'd never forget.*

I am an astronaut, a mission specialist aboard the space shuttle. To date I've had the privilege of flying on four missions, spending a total of about fifty-three days in space. Each mission—each field expedition—has required years of hard work and exacting preparation, culminating in a frenzy of activity in orbit to wring out the greatest amount of scientific return. But one cannot work in orbit without the exhilarating, ever-present view of our planet. The chance to study it, to learn it anew—not through a camera's lens or a satellite's digital sensors but through human eyes—is one I can't resist (Figure 1). Geography comes to life outside the orbiter's windows, and an astronaut can both confirm lifelong concepts about our planet and search for new patterns in Earth's complexity from this superb vantage point.

### SEEING EARTH IN A NEW WAY

Scouting Earth from an orbital platform is both an unforgettable experience and a daunting task. The planet's beauty is overwhelming, and the view from a spacecraft can be enjoyed—even treasured—for the purely visual pleasure it brings. Yet making sense of the details during a ninety-minute sweep around the globe will challenge anyone's interpretive abilities and powers of observation. Getting the most out of an orbital field expedition requires a solid dose of preparation in geography and the

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✪ DR. JONES is an astronaut with the NASA Johnson Space Center, Houston, Texas 77059.