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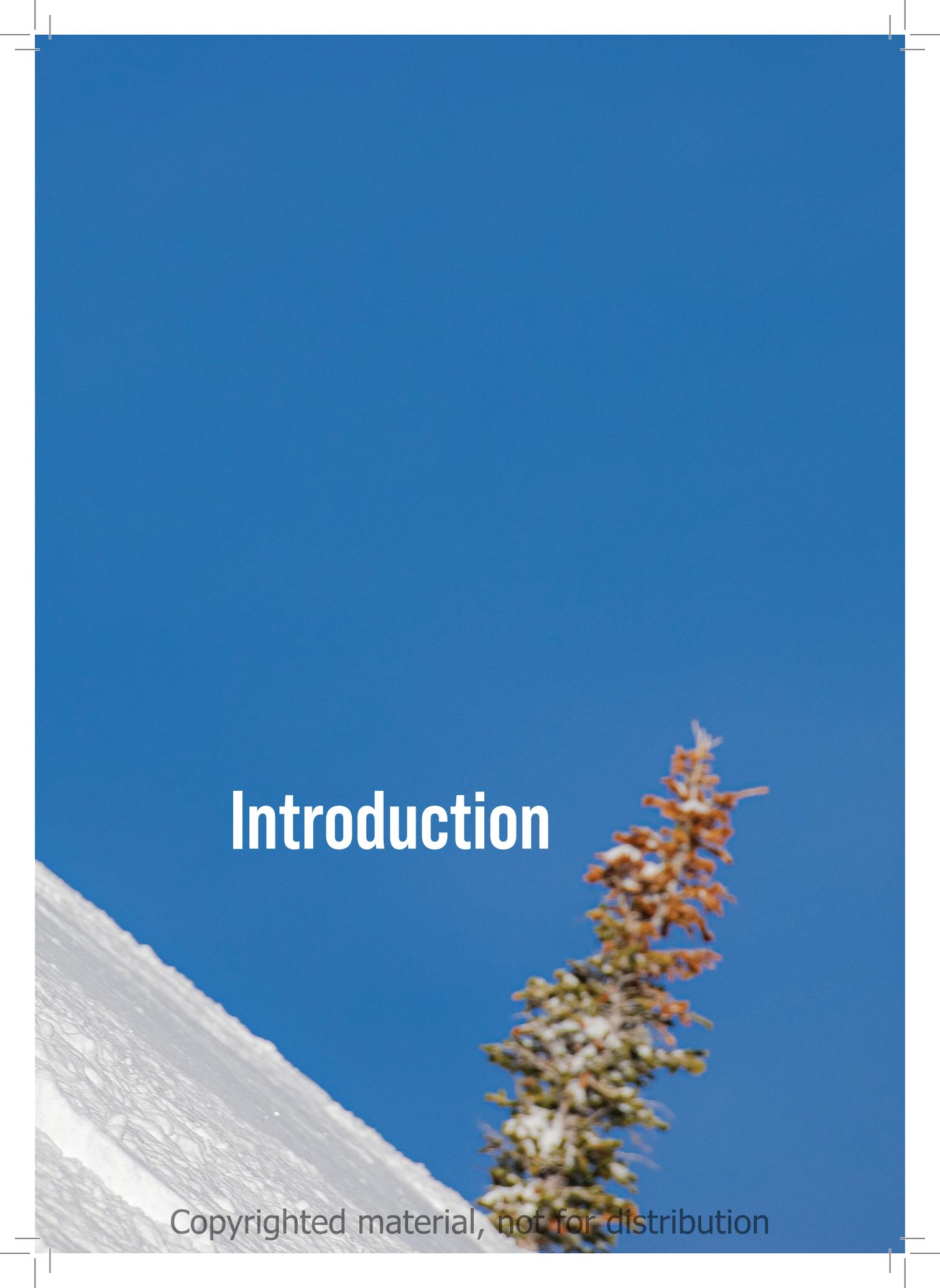
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A photograph of a snowy mountain peak and a pine tree against a clear blue sky. The snow is in the bottom left corner, and the pine tree is in the bottom right corner. The sky is a solid, clear blue.

Introduction

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Is it true? Does Utah really have the Greatest Snow on Earth? What about claims that Utah's snow is lighter and drier than elsewhere, that magic snowflakes are created because the western deserts dry out snow, or that moisture from the Great Salt Lake fuels storms?

The first meteorologist to ponder these questions was S. D. Green in the 1930s. Green was an avid skier who worked for the US Weather Bureau (now the National Weather Service). Lake Placid had just hosted the 1932 Olympics and was a favorite winter-sports destination for easterners. The West, however, was largely unknown to skiers. In an article published in the *Salt Lake Tribune* in 1935, Green argued that the "natural advantages" of Lake Placid were inferior to those of Utah and that upper Big and Little Cottonwood Canyons offered the best skiing in the Wasatch Mountains (Kelner 1980, 155).

In the late 1930s, lifts were installed in the Cottonwood Canyons, and Alta quickly became a mecca for skiers who wanted to avoid the packed slopes of the Alps or the eastern United States. In the 1940s and 1950s, Fred Speyer, Dick Durrance, Sverre Engen, Alf Engen, and Dolores LaChapelle pioneered techniques for deep-powder skiing at Alta. Their new approaches to skiing could have been developed only at a ski area with abundant, high-quality, natural snowfall. Enthusiastically taken up by European ski professionals, these techniques, as noted by Lou Dawson, "spread around the world like pollen in strong wind" (Dawson 1997, 166).

If Utah were to become a powder paradise, however, techniques to minimize avalanche hazard following major storms needed to be developed; in the 1940s, these techniques didn't exist. Shortly after World War II, the US Forest Service appointed Monty Atwater as Alta's snow ranger. Recognizing that adventurers flocked to Alta to ski powder, not to be hemmed in by ropes and closed-area signs, Atwater and fellow avalanche hunter Ed LaChapelle pioneered the use of explosives and artillery to intentionally trigger avalanches before they became life-threatening menaces. Alta became the place for training in snow science and avalanche-mitigation techniques.

With a snow reputation firmly established, skiing blossomed in the Wasatch Mountains. Today, winter recreation represents a \$1 billion a year industry for the State of Utah. More and more recreationists are venturing into the Wasatch backcountry. The slogan Greatest Snow on Earth is one of the most successful in outdoor recreation. For many who come to Utah, powder is more than snow. It is a way of life.

Having grown up in upstate New York, my first western ski experience was in January 1986. The trip was a high school graduation gift from my father. We



skied on long, skinny racing skis, slept in a Motel 6 in the Salt Lake Valley, and hit five ski areas, including Alta, where we had an epic bluebird powder day. Lift tickets at Solitude were \$5. As a budding young meteorologist who had just had his first taste of the Greatest Snow on Earth, I, like S. D. Green before me, began to wonder about the “natural advantages” of Big and Little Cottonwood Canyons.

Figure 0.1. The author ski touring in the Hida Mountains, Japan. Courtesy Peter Veals.

Over the next ten years, I aligned my ski and science passions, eventually earning a PhD in atmospheric sciences from the University of Washington with a specialty in mountain meteorology. Incredibly, I was offered a position at the University of Utah right after graduation. It was 1995 and Salt Lake City had just scored the 2002 Olympic Winter Games. I seized the opportunity and have since spent much of my career studying winter storms and mountain weather around the world (figure 0.1). I’ve spent as much of my free time as possible skiing.

I’ve written this book to set the record straight: to dig into Wasatch weather lore, expose the myths, explain the reality, and tell people the real reasons why Utah’s powder skiing and snowboarding are so incredible. *Secrets of the Greatest Snow on Earth* is a meteorological guide not only to the weather and climate of the Wasatch Mountains but also to mountain weather and snow around the world. It is written for skiers, snowboarders, weather weenies, and anyone else who can’t sleep when the flakes start to fly. I hope it will help you find deep powder and bluebird skies.