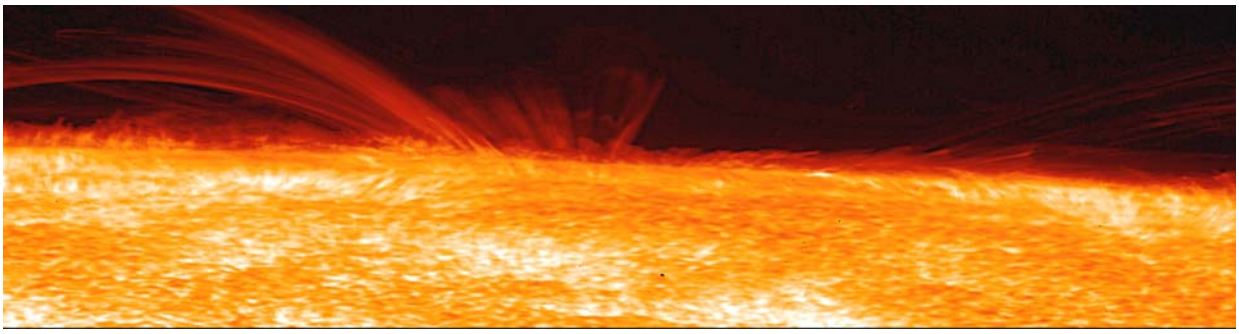

Living "in" a Star
You Will Never Look at the Sun the Same Way Again!

Wednesday, January 27, 2010
7:00 pm
Boulder Public Library
Main Library's Canyon Theater

"Science Serving Society"
NCAR Lecture Series Celebrating NCAR's 50th Anniversary

Sarah Gibson
National Center for Atmospheric Research (NCAR)

We live embedded in the outer atmosphere of a three-dimensional, magnetic star. Throughout the ages, people have gazed up at the heavens and wondered at the brilliance and majesty of the Sun. The ancients worshipped it as a deity and appreciated its role in regulating the seasons. Our modern society, with its technological developments and dependencies, is even more profoundly affected by the capricious moods of the Sun, as solar storms can disrupt communications satellites, power grids, and airline travel. Luckily, we have a deeper understanding of the Sun than of any other star, since we can observe the solar system from within.

Modern solar observations are astronomy with a zoom lens. In the past few decades, telescopic observations have revealed an intricate and dynamic drama playing itself out on a colossal scale as our world silently turns. From the delicate fibril festoon of a sunspot's penumbra to the spectacular explosions of matter and energy known as coronal mass ejections (CMEs) to the enigmatic regularity of the 22-year activity cycle, the Sun exhibits a vitality and complexity unknown to previous generations. Much of this dynamism is linked to magnetic fields.

The National Center for Atmospheric Research (NCAR) celebrates its 50th anniversary this year, and NCAR's High Altitude Observatory (HAO) has been at the forefront of research into magnetic fields at the Sun for over 70 years. In this talk, Dr. Gibson will show how such research can probe the origins and dramatic manifestations of solar magnetism, and seek to understand and predict its impacts at the Earth. Highlights include observations and visualizations of twisted magnetic structures as they emerge and erupt at the Sun, and simulations of the subtle interplay between magnetic fields and turbulent solar plasma that use some of the world's most powerful supercomputers.

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