Observatory sets projects for IQSY

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The rapid advances in the study of the sun and the earth has given impetus to other branches of science. During the researches on the influence of solar activity on the earth new information was discovered which revised our concept of the atmosphere.

Up to until recently, the earth's atmosphere was thought to extend only to a height of 1,000 kilometers. Because at this height the earth's gravitational pull is no longer strong enough to hold the gases that sorround it.

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However, new studies have revealed that the influence of the earth goes farther than the limits of its gravitational pull. It has been found that the magnetic forces of the earth play a part in the conditions of space as far as 100,000 kilometers away.

So that the study of geomagnetism, the earth's magnetic field, has become an important adjunct in space research. We know that above the limits of the earth's atmosphere, there is a layer of ions and electrons which we call the ionosphere.

These ions and electrons react under the influence of the earth's magnetic field. In the previous articles we have found out that the earth's magnetic forces

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have trapped solar radiations forming the Van Allen radiation belts.

Since space weather is vital in the study of radio communications and in the future of space travel, this has been the object of concentrated study by all observatories all over the world — including the Manila Observatory at Loyola Heights.

James P. Heppner, head of the magnetic field section of the Goddard Space Flight Center of the United States has drawn an analogy between 'space weather" and the weather that we experience on the surface of the earth.

In his lecture in the Voice of America forum on space science, Heppner said that the importance of geomagnetism "stems primarily from the fact that matter in our space environment is largely ionized, and under the influence of a magnetic field (that of the earth) the ions and electrons can only move in a prescribed manner.

"Thus the magnetic field acts as a regulator of our space environment. One can draw a rough analogy with the role of the gravitational field in atmospheric phenomena at the earth's surface. The air we breathe is held close to the

Similarly in space, charged particles, such as those in the Van Allen Radiation Belts, are confined by magnetic forces but influenced by the Sun's radiations and the earth's rotations.

"It is essential to recognize that the effective solar radiation is different in the two cases. At the earth's surface it is the radiation of light from the sun that is of primary importance whereas it is the radiation of particles by the sun that is important at great altitudes. In contrast to the sun's radiation of visible light, the intensity of particle radiation is highly variable and these variations have pronounced effect in space which we call "space weather" in this analogy.

"If the magnetic and gravitational fields are the controlling factors at great altitude and near the earth's surface respectively, it would appear that there might be a region in-between where both assume an important role. Whether by accident or by plan this is quite true. This region is the ionosphere, which is located between 80 and 400 kilometers above the earth. Here we find a mixture of neutral and ionized gases, and the field forces are such that the ionospheric environ-