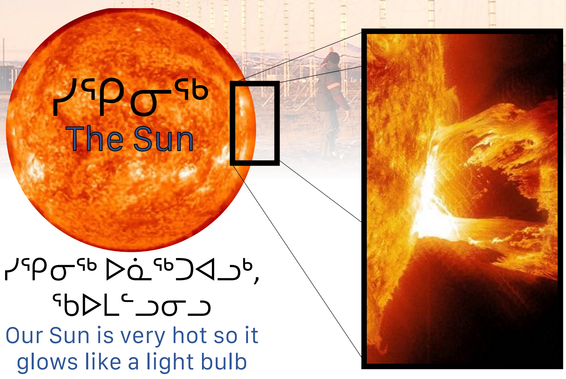

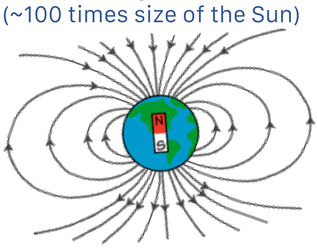

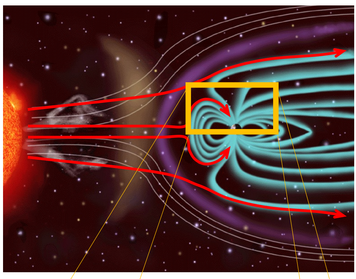

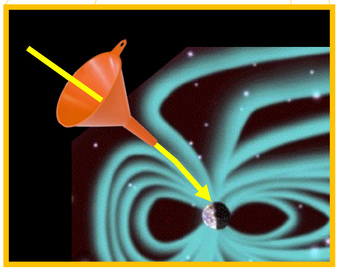

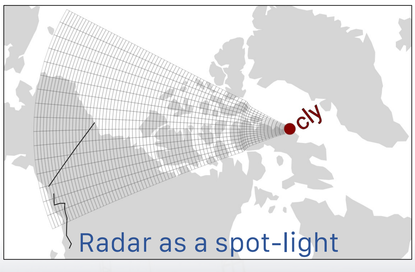

ᑲᖏᖅᑐᒑᐱᒻᒥᑦᖃᐅᔨᓴᐅᑎᑦ: ᑭᓱᒧᑦᖃᐅᔨᓴᐅᑎᐅᒻᒪᑦ? Clyde River Radar: What is it For?

ᓯᕿᓂᖅ

ᓯᕿᓂᖅᐅᓈᖅᑐᐊᓗᒃ,
ᖃᐅᒪᓪᓗᓂᓗ
Our Sun is very hot so it
glows like a light bulb

ᓱᒃᑲᓕᔪᐊᓗᓐᓂᓪᓗᓴᖅᑭᑎᕆᓪᓗᓂ “ᐊᓄᕆᑐᑦ” ᐃᓕᖅᑯᓯᓕᓐᓂᑦ-2-3 ᓴᑲᓐᔅᒥᑦ ᒫᙶᖅᑐᖅᖃᐅᓱᐃᑦᑐᒧᑦᑎᑭᒍᓐᓇᖅᑐᖅ The Sun also produces a very fast “wind” of particles – in 2-3 seconds, such a particle would travel from here to Resolute Bay

ᐃᓛᓐᓂᒃᑯᑦᓱᒃᑲᓕᒃᑲᓐᓂᖅᑐᓂᑦ ᓴᖅᑭᑦᑐᖃᖅᐸᒃᑭᓪᓗᓂ “ᐊᓄᕆᑐᑦ” ᐃᓕᖅᑯᓯᓕᓐᓂᑦ, ᑕᐃᒃᑯᐊ
ᓴᙱᓂᖅᓴᒻᒪᕆᐅᓪᓗᑎᑦ.
Sometimes it emits bursts, so that the “wind” in the direction of the burst becomes stronger

ᓄᓇᕐᔪᐊᖅᓯᕿᓂᕐᒥᑦ ᒥᑭᓐᓂᖅᓴᐅᔪᖅ (100ᓚᐃᖅᓱᓗᐊᖅᑐᒍ) The Earth is much smaller than the Sun (~100 times)

ᓄᓇᕐᔪᐊᖅᑲᐃᕙᑦᑏᓐᓇᖅᑐᓂᓯᕿᓂᕐᒥᑦ. ᑲᐃᕙᑦᑎᓂᕆᔭᖓᓗ ᐅᖓᓯᑦᑐᐊᓘᓪᓗᓂ (ᓯᕿᓂᕐᒥᑦ 100ᓇᐃᖅᓲᑎᓪᓗᐊᒥᒃᐊᖏᓂᖅᓴᒥᑦᑲᐃᕙᑦᑎᓂᓕᒃ)
It is travelling around the Sun along a very large orbit (~100 times size of the Sun)
ᓄᓇᕐᔪᐊᖅ
ᓂᐱᖅᑲᕐᓇᖃᑐᖅ
ᐃᓕᖅᑯᓯᓕᒃ
ᓂᐱᖅᑲᕐᓇᕋᓛᑎᑐᑦᑎᐊᖅ
The Earth has a

magnetic field that
looks like that of a bar
magnet

ᓯᕿᓂᕐᒦᙶᖅᑐᑦ ᓂᐱᖅᑲᕐᓇᐅᑉᓴᙱᓂᖏᑕᓇᓛᒍᓪᓗᐊ ᑭᓯᐊᓂᐃᖏᕐᕋᓂᖃᓯᐅᑦᓲᕐᓗ ᓄᓇᕐᔪᐊᖅᑲᔾᔨᖓᓂᑦ Charged particles from the Sun can only travel along the field lines so that most of the Earth is shielded from the solar particles except areas around the poles

x

ᐸᓇᒃᑰᖅᑐᑎᑐᑦᐃᓕᖅᑯᓯᓕᒃ!
It’s like a funnel!

ᖃᐅᒻᒪᖃᑦᑕᖅᑐᑦᐊᓄᕆᑐᑦᐃᖏᕐᕋᔪᑦ
ᓱᒃᑲᓕᔪᐊᓘᒻᒪᑕᐊᑦᑐᖅᑕᖅᑐᑎᑦ ᐊᓂᕐᓂᖃᕐᓇᖅᑐᒥᑦᑐᓄᑦ
The light is produced through collisions
between the very fast electrons and
atmospheric atoms and molecules

ᐊᓂᕐᓂᖃᕐᓇᖅᑐᒥᑦ ᓄᐊᖃᑦᑕᖅᑐᑦᓲᕐᓗ ᓄᕗᔭᑎᑐᑦᓱᑲᓐᓇᖅᓯᓯᒪᔪᑦᐳᖅᑐᓂᖃᖃᑦᑕᕐᑐᑦ 100 ᐊᒻᒪᓗ 300km ᐊᖅᓴᕐᓃᑦᐃᓂᒋᖃᑦᑕᓪᓗᐊᖅᑕᖓᓃᓲᑦ
Fast electrons end up at altitudes between 100 and 300 km and produce “clouds” of charged particles co-located with auroras

ᑖᒃᑯᐊ “ᓄᕗᔭᐅᔮᖅᑐᑦ” ᖃᐅᔨᓴᐅᑎᒦᙶᖅᑐᓂᑦᐊᐅᓪᓚᖅᑎᑕᐅᔪᓂᑦ ᐅᑎᖅᑎᑦᑎᓯᐅᑦᐊᒻᒪᓗᖃᐅᔨᒪᔾᔪᑕᐅᔪᓐᓇᖅᑐᑦᐊᖅᓴᕐᓃᑦ ᓇᒦᒐᔪᖃᑦᑕᕐᒪᖔᑕ
These “clouds” reflect radio waves, so that the waves can be used to detect the aurora’s location

ᓄᓇᕐᔪᐊᖅᑲᔾᔨᖓᑕᖃᓂᒋᔭᖓᓂᑦ 100km ᐅᖓᓯᓐᓂᓕᓐᓂᑦᐊᖅᓴᕐᓂᖃᓕᖃᑦᑕᖅᐳᖅᐅᐃᔾᔮᕐᓂᖓ
ᐱᔾᔪᑎᒋᓪᓗᒍ

In circular areas around the poles the circulation brings high-energy particles to the atmosphere above

100 km altitudes and causes aurora

ᖃᐅᔨᓴᐅᑎᑦᖃᐅᔨᒪᔾᔪᑎᐅᓂᖏᑦ Radar as a spot-light