arrives at the PC from all spacecraft more or less continuously, with the exception of brief receptor coverage gap zones. This makes practical a PC architecture where each spacecraft and its payload have their own, dedicated processing hardware and software, since there is no advantage to sharing computer resources. This then allows 1) Simple system growth Oust add another computer when a new spacecraft is launched, and test/debug the new system without perturbing the existing system), 2) Easily accommodated differences in spacecraft sensor payload suites (its own computer/software services its own unique payload), 3) Simple failure mitigation (a patch specific to a particular sensor flaw is specific to its own unique and dedicated computer), 4) A new spacecraft and its new computer can utilize the latest in computer hardware instead of forced use of dated equipment, 5) Software improvements can be done and tested on a spare parallel computer without disturbing the working system, and 6) Global computer failures are isolated to a single spacecraft/payload.

[0071] Referring to FIG. **5**, a processing center (PC) having the foregoing advantages may comprise two separate processors **110** and **112** which use the same type of hardware. They have identical but separate operating systems, and they execute different algorithms required for the processing of signals from different satellites. Processor **110** is dedicated to processing mission data received from satellite **20**, whereas processor **112** is dedicated to processing mission data received from satellite **22**. The data from the satellites is switched to the proper processor by a controller **108**. By using this technique, processors may be lower capacity and lower cost than providing a single high speed processor to process data for both satellite **20** and satellite **22**. In addition, each processor may be programmed to handle any algorithms which are unique to the type of data being processed from a particular satellite. When a new satellite comes on line, a new processor is added and may be programmed to handle the data from the new satellite. Since satellite systems advance rapidly in capability, this technique ensures that the processing center will not become obsolete when a new satellite begins to feed data to the processing center. The existing satellites and their respective computers may continue to function. The new satellite can be brought on line by merely programming a new computer to handle its needs while the existing computers continue to function as in the past.

[0072] In summary, this invention offers at least the following advantages over the known traditional systems:

[0073] 1. Near-zero final weather product timeliness: continuous data from all satellites instead of bursts of large amounts of widely separated (in time) data bunches;

[0074] 2. Robustness;

[0075] 3. Growth and redundancy;

[0076] 4. No orbital phasing control required; any initial phasing, any orbit drift is accommodated

[0077] 5. Downlink bandwidth can be in the tens of Mbps;

[0078] 6. "Preemption" concerns disappear; planned, random, pronounced, or permanent;

[0079] 7. Unmanned (no human errors, training, housing, management);

[0080] 8. Security issues and concerns eliminated or more easily controlled;

[0081] 9. Life-Cycle-Cost reduction; more economical overall (inexpensive terminals, no staffing);

[0082] 10. Spacecraft simplified, more reliable (no gimbaled antenna: fixed/shaped beam);

[0083] 11. Can be an independent adjunct to "Traditional" ground stations (enhancement, backup);

[0084] 12. No need to artificially crop physical contact opportunities (no minimum pass time imposed);

[0085] 13. No S/C-to-Ground Station coordination, cooperation, scheduling (mostly gone);

[0086] 14. Mix and match orbits (e.g. different missions, different altitudes/periods) (no competition for station time);

[0087] 15. Potential external funding since the system could be utilized by other future satellite systems;

[0088] 16. No concern about simultaneous downloads to same terminal (physically impossible);

[0089] 17. Simple deployment and installation;

[0090] 18. An excellent approach to system autonomy (Autonomous Mode).

[0091] Those skilled in the art will recognize that only the preferred embodiments of the invention have been described in this specification. These embodiments may be modified and altered without departing from the true spirit and scope of the invention as defined in the accompanying claims.

What is claimed is:

1. A satellite communication system comprising:

at least one satellite orbiting the earth, said at least one satellite including a device for collecting data, said satellite transmitting signals including the data to the earth;

a plurality of terminals on the earth receiving the transmitted signals from the at least one satellite, said plurality of terminals processing the signals and transmitting the data on a communications link on the earth; and

a processing center on the earth, said processing center receiving the data on the communications link from the plurality of terminals.

2. The system according to claim 1 wherein the plurality of terminals are receive only terminals that do not transmit signals to satellites.

3. The system according to claim 1 wherein the plurality of terminals are unmanned terminals.

4. The system according to claim 1 wherein the communications link includes fiber optic cables.

5. The system according to claim 1 wherein the at least one satellite is a plurality of satellites that transmit signals including data to the plurality of terminals.

6. The system according to claim 1 further comprising a satellite operations center on the earth, said satellite operations center receiving signals from the processing center concerning system operations, and said satellite operations center sending signals to the at least one satellite and the plurality of terminals for changing system operations in response thereto.