

4.5 Fire Affected Area Outcomes.

The spatial distribution of fire affected areas showed a similar pattern across both years. Large fire scars were mapped in northern Australia in autumn and winter. A limited number of small fire affected areas were mapped in the south of Australia during spring and summer.

The area mapped as fire affected doubled in the second year due to a large increase in fire affected areas in central Western Australia and northern Queensland. This increase corresponds with the increase in number of fire hot spots detected in the second year of study.

IGAER 1 had the largest fire affected area mapped and IGAER 8 had the lowest area mapped in both years. The greatest range across years occurred in IGAER 11 where there was a large increase in area mapped as fire affected.

A bimodal FAA distribution occurred in IGAER 1 which coincides with the bimodal distribution of fire hot spots detected in this IGAER. IGAER 8 and 9 in the south showed a bimodal distribution in fire hot spots but not in fire affected areas due to the small area burnt. Fire affected areas in southern regions are often not mapped, as AHVRR ground resolution is limited to 3 km², thus fire scars with an area smaller than this will not be detected.

5.0 Fire Hot Spots in Fire Affected Areas

5.1 Development of Fires in Fire Affected Area Dataset

The Fire Hot Spots in Fire Affected Areas (FINF) dataset was created to show the correlation between the FHS dataset and the FAA dataset.

The FAA data were concatenated into three monthly bins and all fire affected areas were buffered to 1 kilometre. Buffering is a process whereby a set distance is added to the external boundaries of polygons. The FAA data was buffered to help account for the geo-positional swing of the satellite that has been corrected in the automatically detected FHS data, but is manually corrected during the FAA mapping. The buffer was added only for the correlation testing.

The FHS data were concatenated into monthly bins. These data were intersected with the 3 monthly buffered FAA dataset to determine the number of fire hot spots that fell within temporally related fire affected areas. The temporal relationship between fire hot spots and fire affected areas was estimated at three months, so fire hotspots for one month were compared to fire affected areas for that month and the two succeeding months. If a FAA was not mapped within three months of the fire it was determined that no scar could be seen.

Each fire hot spot in the monthly bin was assigned a value, either 1 or 0. The value 1 demonstrated that the FHS falls within a FAA, the value 0 meant it was outside a FAA. Each FHS monthly bin was attributed in this way, apart from February and March 2000. The temporally related FAA data, for these FHS monthly bins, April and May 2000, were beyond the limits of this project.

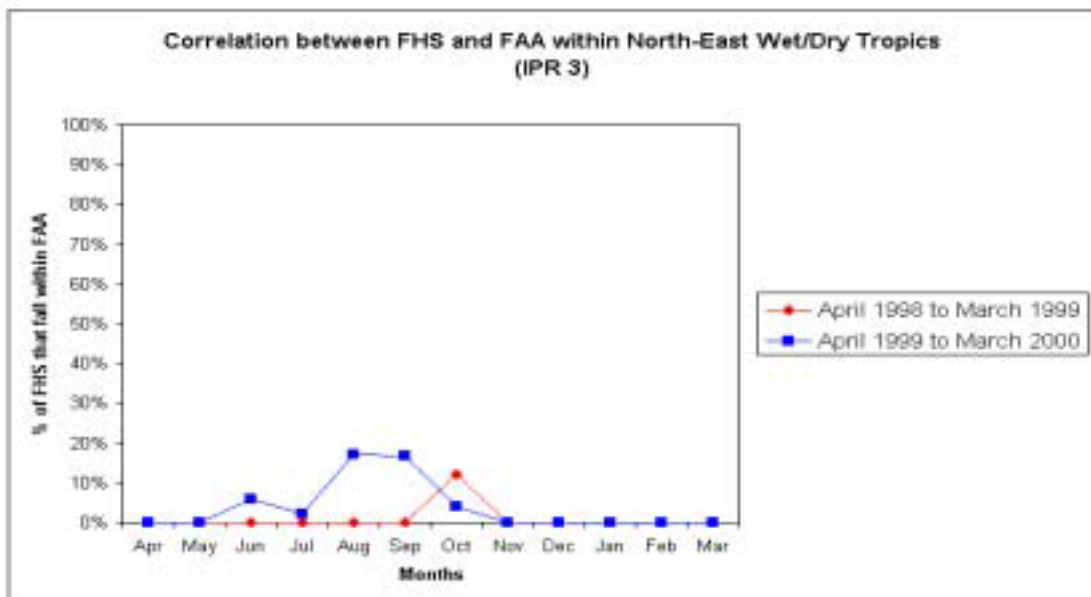
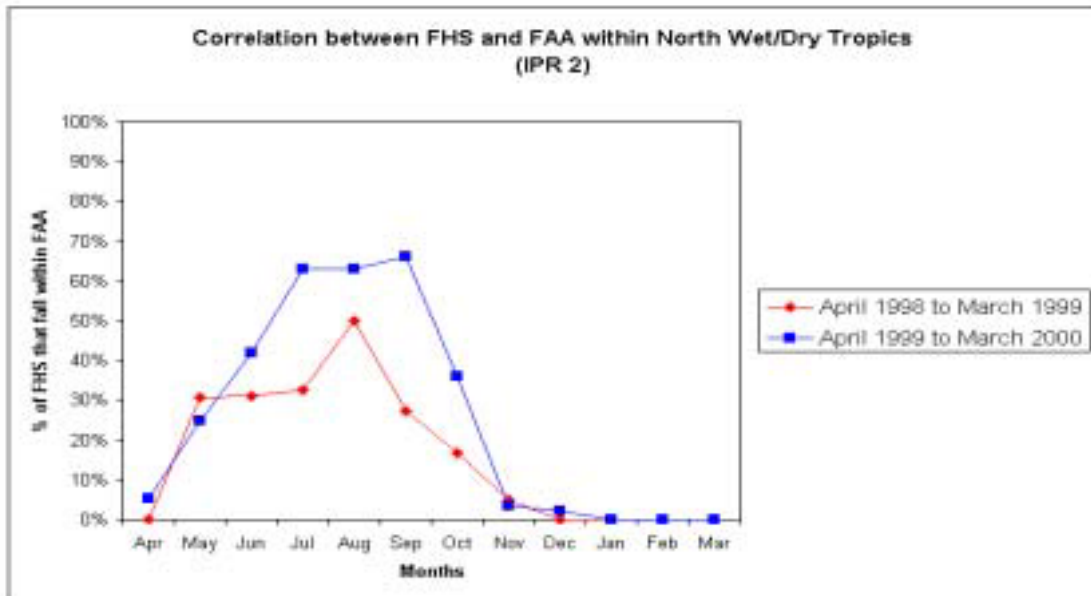
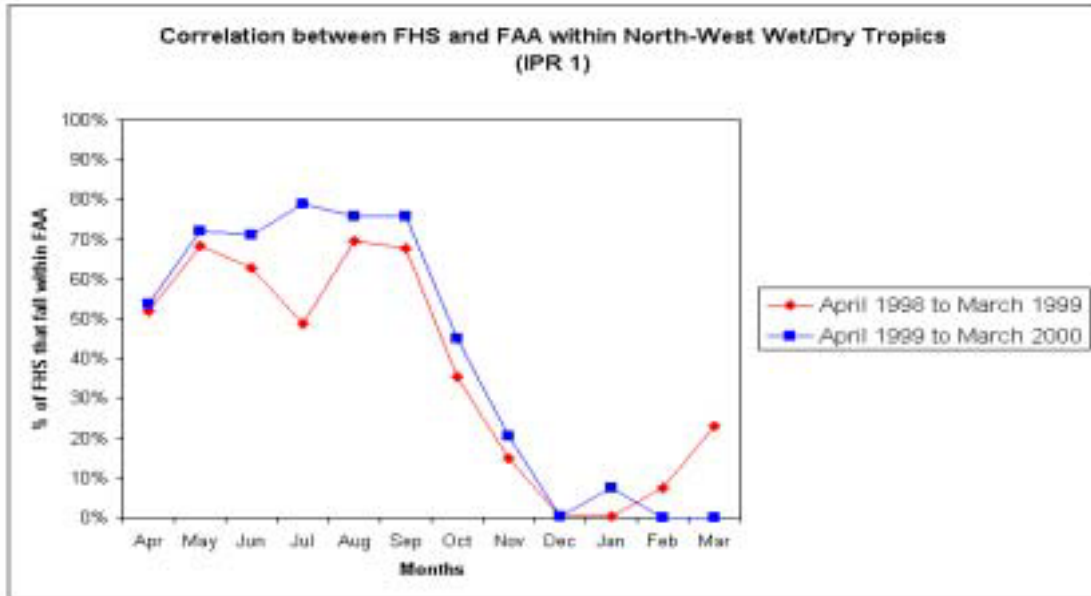
The FINF data were exported from ArcView to Access where a cross tabulation table was created that calculated the sum of values in the FINF field of the FHS table, for IBRA, per month. The sum equates to the number of fire hot spots that fell within a FAA. This data was compared to the total number of FHS per IBRA per month to derive a percentage FINF value. The percentage FINF value is shown in Figure 5.1.

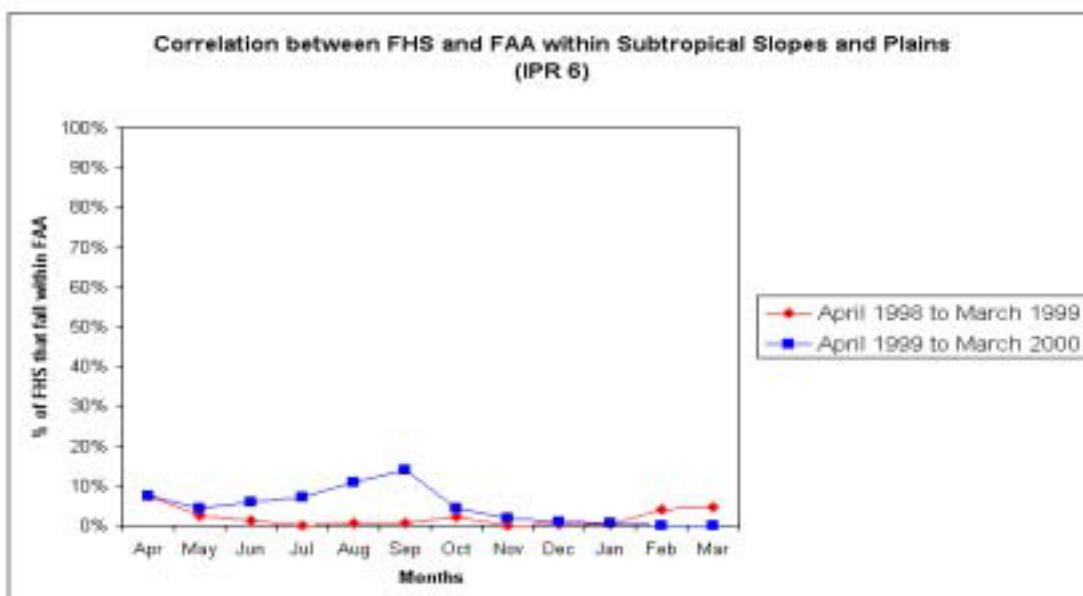
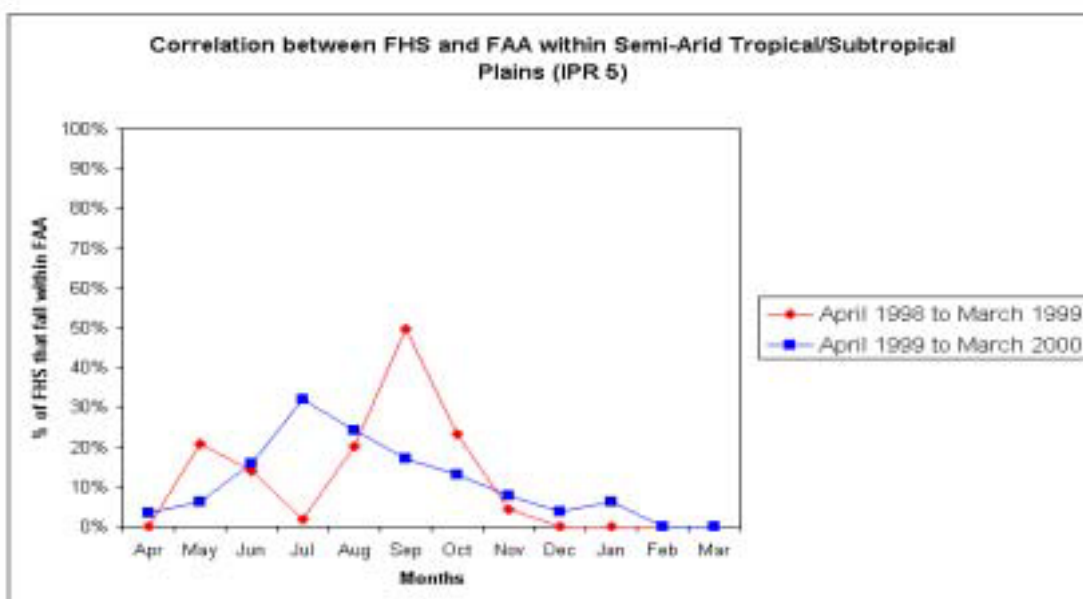
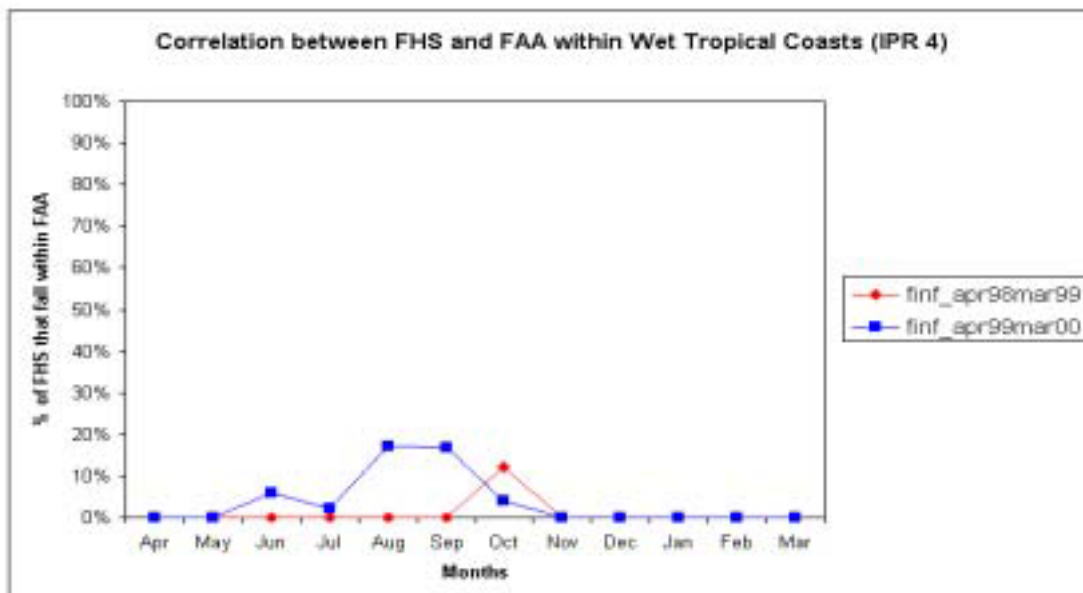
5.2 IGAER Analysis of Fires in Fire Affected Areas

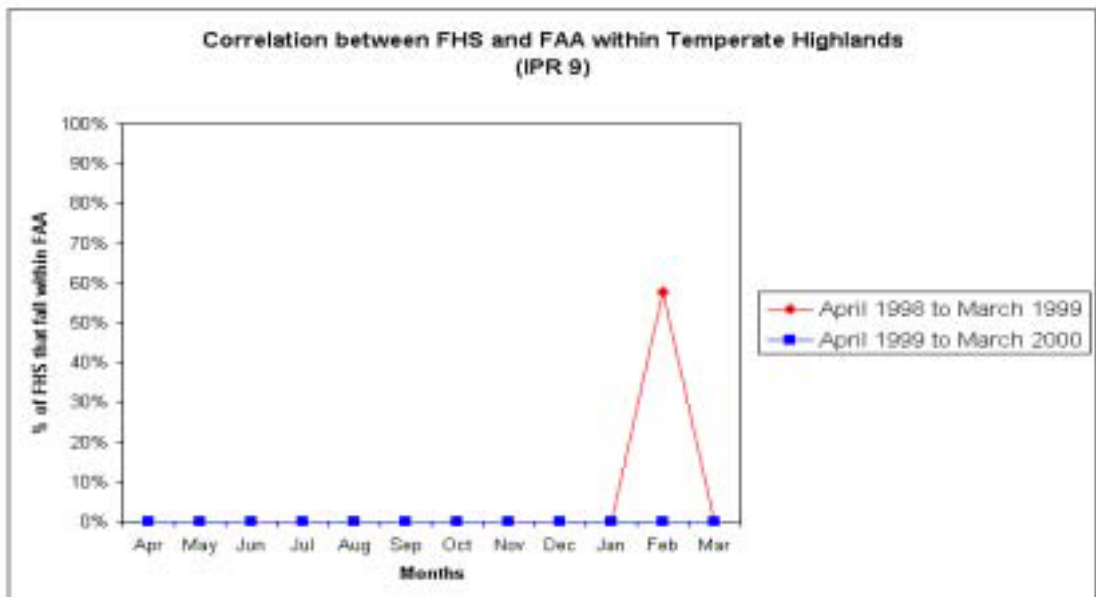
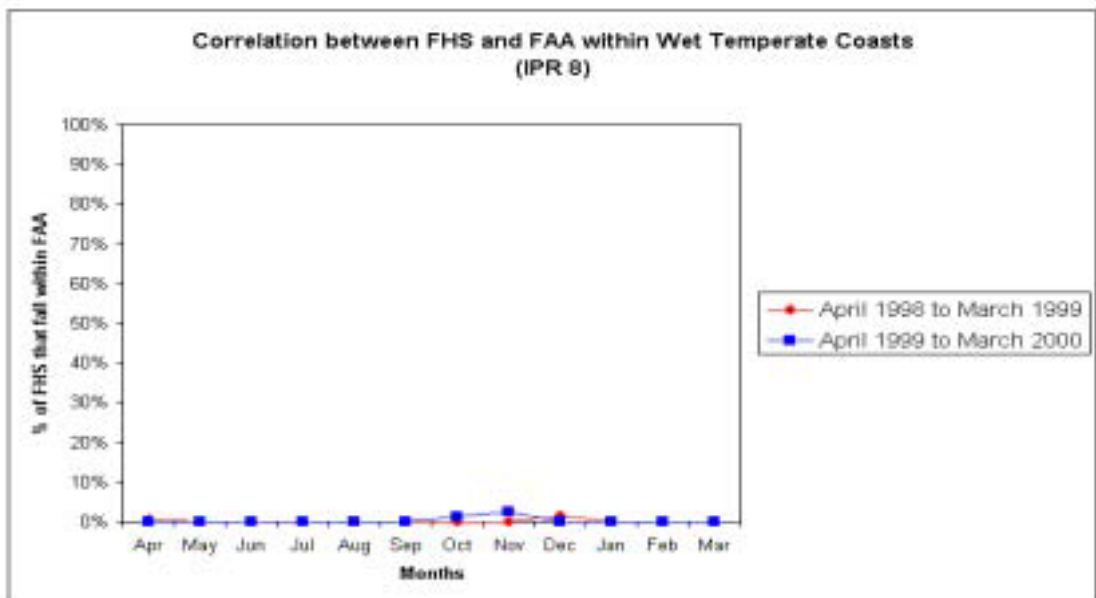
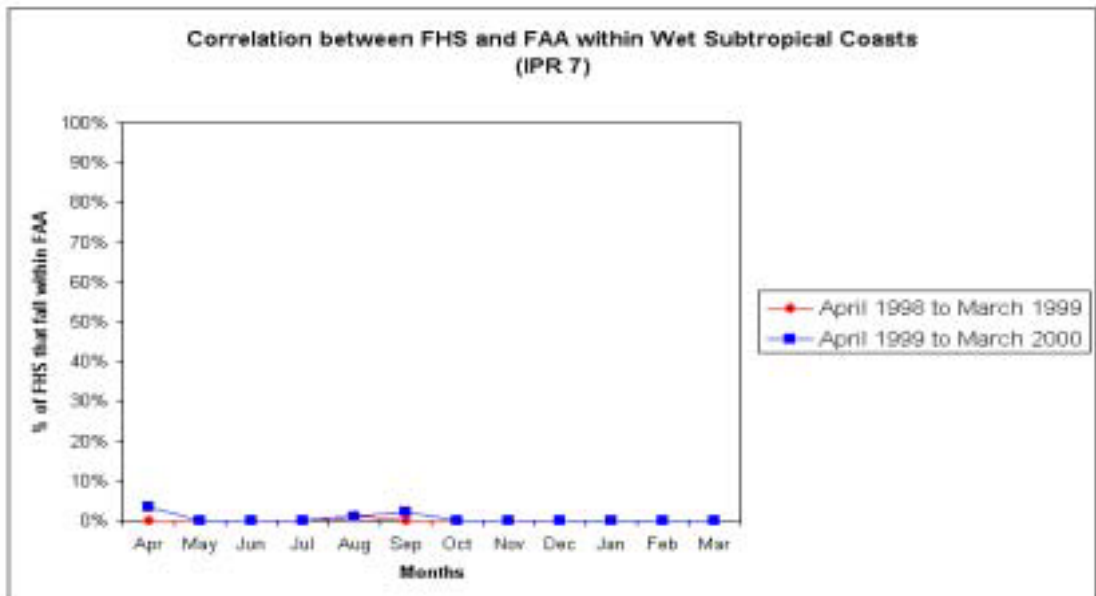
Figure 5.1 shows the correlation between fire hot spots and fire affected areas for each IGAER over the two year study.

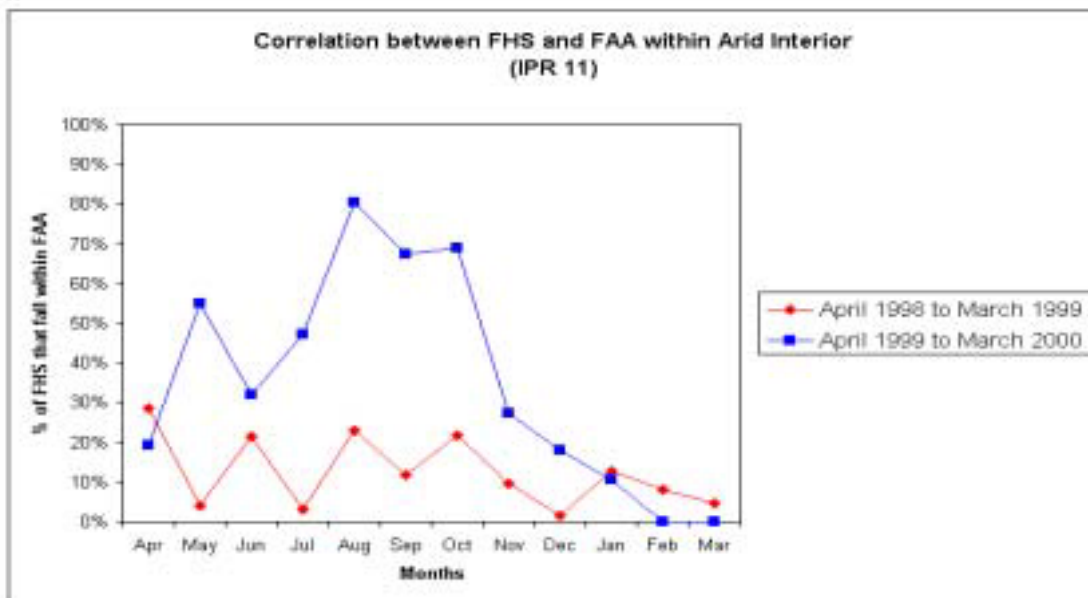
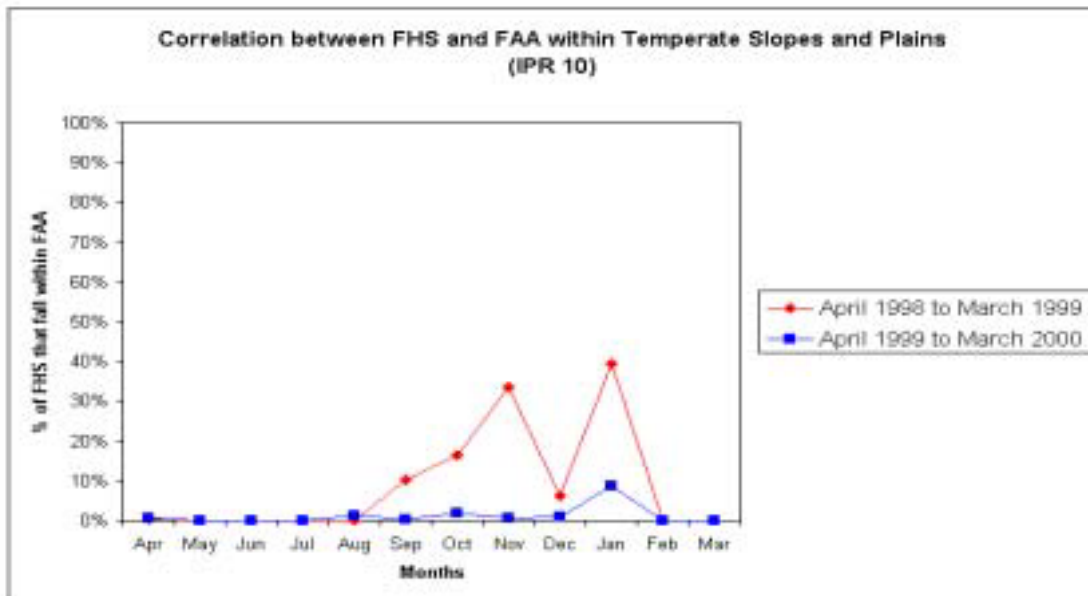
IGAER 1 and 2 showed a high correlation in the period July, August and September. IGAER 11 showed a high correlation in August and September in the second year of study, but correlation was low in the first year. The remaining IGAER showed a low correlation across both years.

Figure 5.1 Correlation Between Fire Hot Spots and Fire Affected Areas for Each IGAER (IPR). See Figure 1.2 for IGAER (IPR) regions.









5.3 Fires in Fire Affected Area Outcomes

The only IGAER that showed good correlation were those that had large fire affected areas in the north of Australia. These IGAER recorded high correlation in the winter months and very low correlation in the summer months. The correlation drops away in summer due to monsoon conditions which make viewing the ground difficult.

Southern areas showed low correlation due to the limited number of fires and small areas mapped as burnt.