**Budget Justification**

PERSONNEL

PI – Erik Crosman (effort = 6 cal. mos.):This position directs the overall project operation and as a research assistant professor will be directly involved in all technical and data processing, quality control, and archiving aspects of the project, including downloading, processing, and developing the satellite-derived lake temperature climatology and temporal time series.

Graduate Student #1 (effort = 12 cal. mos): This position will involve a M.S. student who will commit 100% effort to this project, subsetting, processing, and developing the satellite lake temperature data sets, and applying the various quality control and other processing techniques related to this study. Anticipated hire date 20 August 2018.

Salary increase of 4% is included in Year 2.

FRINGE BENEFITS

The fringe benefit rate for full-time faculty/staff is calculated at 37% for all years. The fringe benefit rate for graduate students is calculated at 8% for all years. Salary increase of 4% is included in Year 2.

TRAVEL – DOMESTIC Total: $10,000

Travel funds for Year 1 include support for both the PI and graduate student to participate in one annual remote sensing or global change conference per year. Funds are requested in Year 1 for the graduate student to attend the ASLO Aquatic Sciences Meeting and for the PI to attend the 2019 Group for High Resolution Sea Surface Temperature (GHRSST) meeting in Year-.

Year 1:

 ASLO Aquatic Sciences Meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 persion @ $750 airfare: | $750 |
|  | Ground transportation: | $165 |
|  | 6 nights hotel @ $140/night: | $840 |
|  | 5 days per diem @ $69/day: | $345 |
|  | Conference registration  | $500 |
|  | Total | $2600 |

 GHRSST annual meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 persion @ $750 airfare: | $850 |
|  | Ground transportation: | $165 |
|  | 6 nights hotel @ $140/night: | $840 |
|  | 5 days per diem @ $69/day: | $345 |
|  | Conference registration  | $200 |
|  | Total | $2400 |

Travel funds for Year 2 include support for both the PI and graduate student to participate in one annual remote sensing or global change conference determined to be the most appropriate and effective way to disseminate the study results to the scientific community. In February 2020, the PI will present the results of this study the 2020 American Geophysical Union Ocean Sciences (AGU OS) joint meeting with the Association for the Sciences of Limnoloigy and Oceannography (ASLO) (location to be determined) and results will be presented by the graduate student at the AGU Fall 2019 conference on 9-13 December 2019 in San Francisco, CA.

Year 2:

 AGU OS/ASLO meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 person @ $550 airfare: | $550 |
|  | 5 days rental car: | $300 |
|  | 6 nights hotel at $160/night: | $960 |
|  | 5 days per diem at $69/day: | $345 |
|  | Conference registration: | $500 |
|  | Total: | $2655 |

 AGU Fall Meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 person @ $350 airfare:  | $350 |
|  | Ground transportation: | $150 |
|  | 5 nights hotel at $200/night: | $1000 |
|  | 5 days per diem at $69/day: | $345 |
|  | Conference registration: | $500 |
|  | Total: | $2345 |

PUBLICATIONS

Support is requested for one publication in Year 2 ($3000 per manuscript).

SUPPLIES

Materials and supplies (peripheral computer hardware, backup tapes, etc.): Year 1 $499, Year 2 $493.

OTHER

30 tbytes of disk storage for processing large global lake temperature data sets (100% used by project): $5000 in Year 1.

INDRECT COSTS

University of Utah indirect costs are calculated at a rate of 52.5% of a Modified Total Direct Cost (MTDC).

**Budget Justification – Year 2**

PERSONNEL Total: $66,097

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Position Title, & Name** | **Yearly Salary** | **% of Time** | **Months** | **Amount** |
| PI, Erik Crosman | 73,788 | 50% | 6.0 | 36,894 |
| Graduate Student #1 | 29,203 | 100% | 12.0 | 29,203 |

Salaries in year 2 assume a 4% increase.

PI – Erik Crosman: This position directs the overall project operation and as a research assistant professor will be directly involved in all technical and data processing, quality control, and archiving aspects of the project, including downloading, processing, and developing the satellite-derived lake temperature climatology and temporal time series.

Graduate Student #1: This position will involve a M.S. student who will be 100% working on this project, subsetting, processing, and developing the satellite lake temperature data sets, and applying the various quality control and other processing techniques related to this study.

FRINGE BENEFITS Total: $15,987

|  |  |  |  |
| --- | --- | --- | --- |
| **Position Title, & Name** | **Yearly Salary** | **% Rate** | **Amount** |
| PI, Erik Crosman | 73,788 | 37% | 13,651 |
| Graduate Student #1 | 29,203 | 8% | 2,336 |

The fringe benefit rate for full-time faculty/staff is calculated at 37% for all years. The fringe benefit rate for graduate students is calculated at 8% for all years.

TRAVEL – DOMESTIC Total: $5,000

 Travel funds include support for both the PI and graduate student to participate in one annual remote sensing or global change conference determined to be the most appropriate and effective way to disseminate the study results to the scientific community. In February 2020, the results of this study will be presented at the 2020 American Geophysical Union Ocean Sciences (AGU OS) joint meeting with the Association for the Sciences of Limnoloigy and Oceannography (ASLO) (location to be determined) by the PI and by the graduate student at the AGU Fall 2019 conference on 9-13 December 2019 in San Francisco, CA.

 AGU OS/ASLO meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 person @ $550 airfare: | $550 |
|  | 5 days rental car: | $300 |
|  | 6 nights hotel at $160/night: | $960 |
|  | 5 days per diem at $69/day: | $345 |
|  | Conference registration: | $500 |
|  | Total: | $2655 |

AGU Fall Meeting:

|  |  |  |
| --- | --- | --- |
|  | 1 trip x 1 person @ $350 airfare:  | $350 |
|  | Ground transportation: | $150 |
|  | 5 nights hotel at $200/night: | $1000 |
|  | 5 days per diem at $69/day: | $345 |
|  | Conference registration: | $500 |
|  | Total: | $2345 |

SUPPLIES Total: $493

Materials and supplies (peripheral computer hardware, backup tapes, etc.): $493

OTHER Total: $3,000

Publications (2 papers in the Journal of Remote Sensing of the Environment and International Journal of Remote Sensing @ $1500/paper): $3000

TOTAL DIRECT COSTS Total: $90,577

|  |  |
| --- | --- |
| Personnel | 66,097 |
| Fringe | 15,987 |
| Travel | 5,000 |
| Equipment |  |
| Supplies | 493 |
| Other | 3,000 |
| Total Direct Costs | 90,577 |

INDRECT COSTS Total: $47,553

The rate is 52.5% and is computed on the following direct cost base $90,577

|  |  |
| --- | --- |
| Personnel | 66,097 |
| Fringe | 15,987 |
| Travel | 5,000 |
| Equipment |  |
| Supplies | 493 |
| Other | 3,000 |
| Total Direct Costs | 90,577 |
| Indirect Cost Rate (52.5%) |  |
| Total Indirect Cost | 47,553 |

TOTAL DIRECT AND INDIRECT COSTS Total: $138,130